



**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 9
75 HAWTHORNE STREET
SAN FRANCISCO, CA 94105**

November 30, 2000

VIA U.S. MAIL

TO: ATTACHED LIST OF RESPONDENTS' REPRESENTATIVES

Re: Charnock Sub-Basin MTBE Site
Unilateral Order for Participation and Cooperation in Initial Regional Response
EPA Docket No. RCRA-7003-09-2001-0001

Dear Representatives:

The United States Environmental Protection Agency ("EPA") hereby issues the enclosed Unilateral Administrative Order for Participation and Cooperation in Initial Regional Response, EPA Docket No. RCRA-7003-09-2001-0001, pursuant to Section 7003 of the Resource Conservation and Recovery Act ("RCRA"), 42 U.S.C. Section 6973, to address MTBE and other gasoline constituent contamination that may pose an imminent and substantial endangerment to public health and the environment. EPA is taking this enforcement action as a result of releases of MTBE and other gasoline constituents from the sites listed in Attachment B to the Order. EPA has determined that these releases have impacted the Charnock Sub-Basin and its beneficial use as a drinking water supply and therefore may pose an imminent and substantial endangerment to health and the environment.

The Order requires you and/or your companies to participate and cooperate in performing the initial regional response activities identified in the Scope of Work to the Order. You and/or your companies are required to participate and cooperate with the respondents (Shell Oil Company, Shell Oil Products Company and Equilon Enterprises, LLC, collectively "the Shell Respondents") to the Administrative Order on Consent for Initial Regional Response ("AOC"), Docket Number RCRA-7003-09-2000-0003. The Shell Respondents are also required to perform the initial regional response activities and have begun doing so in compliance with the AOC. Copies of the AOC are available on EPA's website at:

www.epa.gov/region09/MTBE/charnock.

Also enclosed is EPA's memorandum finalizing the AOC and responding to a comment letter

Letter to PRP Representatives

November 30, 2000

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submitted by Jerry Ross, Esq. on behalf of eight of the recipients of this letter.

If you have any technical questions, please contact either Steven Linder at (415) 744-2036 or Greg Lovato at (213) 576-6713. For any legal questions, please contact Laurie Williams at (415) 744-1387.

Thank you for your attention to this matter.

Sincerely,

Original Signed By

Jeff Scott, Acting Director
Waste Management Division
U.S. EPA, Region 9

cc: See Attached List

LIST OF RESPONDENTS' REPRESENTATIVES
U.S. EPA UNILATERAL ORDER FOR PARTICIPATION AND COOPERATION
IN INITIAL REGIONAL RESPONSE
EPA DOCKET NO. RCRA-7003-09-2001-0001

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MEMORANDUM

Subject: Response to Public Comments and Finalization of Order
Administrative Order on Consent for Interim Regional Response
Docket No. RCRA-7003-09-2000-0003
Respondents Shell Oil Company, Shell Oil Products Company and
Equilon Enterprises, LLC
Charnock Sub-Basin MTBE Contamination Site

From: Jeff Scott, Acting Director
Waste Management Division

To: Administrative Record File
For Charnock Sub-Basin MTBE Contamination Site

Date: November 30, 2000

This purpose of this memorandum is to document that the above-referenced settlement agreement is now final and effective, and to respond to the public comment letter that was received during the public comment period for this consent order.

Finalization of Consent Order

On July 26, 2000, I signed the Administrative Order on Consent ("AOC") for Interim Regional Response for the Charnock Sub-Basin MTBE Contamination Site, EPA Docket No. RCRA-7003-09-2000-0003. The Respondents to this AOC are Shell Oil Company, Shell Oil Products Company and Equilon Enterprises, LLC (collectively "Shell" or "the Shell Respondents"). In compliance with the Resource Conservation and Recovery Act ("RCRA") Section 7003(d), 42 U.S.C. Section 6973(d), EPA provided public notice of the proposed settlement and of a thirty (30) day opportunity for public comment. EPA published this notice in the Federal Register on September 6, 2000. See 65 Fed. Reg. 54,024 (2000). At the end of the thirty (30) day public comment period, only one comment letter had been received. This comment letter was provided on October 4, 2000 by Jerry Ross, Esq., on behalf of the Charnock Group. EPA's response to this comment is provided below.

The AOC will be implemented in collaboration with the California Regional Water Quality Control Board, Los Angeles Region ("Regional Board"). EPA and the Regional Board (collectively "the Agencies") are conducting a joint enforcement action with respect to the Charnock Sub-Basin MTBE Contamination Site. The Regional Board has entered into a Stipulated Agreement with the Shell Respondents that requires implementation of an identical Scope of Work ("SOW") to the SOW for the AOC, with one exception. Prior to finalizing its Stipulated Agreement with Shell in a resolution dated August 31, 2000, the Regional Board, in consultation with Shell, revised the SOW to that agreement to require Shell to provide copies of all submittals to a representative of the Charnock Group at the same time that they submit these documents to the Agencies. Regional Board Resolution No. R 00-015. The Shell Respondents approved this change in the Stipulated Agreement.

Response to Public Comment

On October 4, 2000, EPA received the comment of Jerry Ross, Esq., submitted on behalf of eight potentially responsible parties ("PRPs") (Atlantic Richfield Company, Chevron USA, Inc., Exxon Mobil Corporation, Unocal Corporation, Thrifty Oil Company, Tosco Corporation, Mobil Oil Corporation and Best California Gas, Ltd.) with responsibility for underground storage tank locations that have been designated as Source Sites for the Charnock Sub-Basin MTBE Contamination Site. See copy of October 4, 2000 letter, attached. Mr. Ross stated that this group of PRPs is calling itself "the Charnock Group."

Mr. Ross's letter indicated that the Charnock Group had seven concerns with respect to the proposed AOC. Mr. Ross described four procedural concerns (1) lack of a process for non-Shell PRPs to timely receive data "as it is released from Shell's analytical laboratories," (2) the inability of non-Shell PRPs to participate in AOC meetings between the Shell Respondents and the Agencies, (3) lack of provision for receipt by non-Shell PRPs of Shell submissions to the Agencies on the same day as they are received by the Agencies, and (4) the lack of a "defined" opportunity for PRPs to comment on all aspects of AOC implementation. In addition, Mr. Ross indicated three additional concerns of the Charnock Group, specifically (1) the possibility that Shell would avoid full characterization of the contamination from its source site, (2) delays in allowing the Charnock Group to perform additional characterization activities that they believe will further characterize Shell's plume, and (3) the Charnock Group's concern that Shell will persuade the Agencies to focus the investigation effort on non-Shell locations.

EPA believes that the Charnock Group's procedural concerns have been adequately addressed by the Regional Board's requirement that Shell provide all submittals simultaneously to a Charnock Group representative and by the Agencies' commitment to notify the Charnock Group of a schedule for submitting comments on each Shell document submitted pursuant to the AOC.

This schedule is the same schedule for submission of comments that the Agencies will be giving to the

Finalization of AOC
Charnock Sub-Basin MTBE Site
November 30, 2000
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Impacted Parties (the City of Santa Monica and the Southern California Water Company) in order to obtain their input. These measures have already been implemented. Together these measures should allow the Charnock Group an adequate opportunity to monitor and provide input on AOC implementation.

By separate order, the Charnock Group and other potentially responsible parties will be required to participate and cooperate with Shell in the implementation of the AOC. To insure that the Charnock Group and other Charnock PRPs have an adequate opportunity for input, the Agencies will host additional technical meetings on a periodic basis, beginning with a meeting on December 4, 2000, in order to give technical representatives of the non-Shell PRPs an opportunity (1) to hear an Agencies' presentation on AOC implementation to date, (2) to ask questions, and (3) to provide additional input and express concerns. The Charnock Group has been and will continue to receive copies of monthly AOC technical meeting minutes prepared by the Shell Respondents. The Agencies believe that the Charnock Group's participation in the monthly AOC technical meetings would be appropriate only if the Agencies, the Shell Respondents and the Charnock Group are able to agree on a method of participation that will not impede the work being performed in these meetings. In the interim, EPA believes that the measures described in this memorandum will adequately address the procedural concerns raised by Mr. Ross's letter.

With respect to the supplemental concerns regarding adequate characterization of Shell's plume and biased suggestions by Shell for further investigation, EPA believes that (a) the Agencies have sufficient technical expertise to effectively evaluate these issues from a neutral perspective and (b) the Charnock Group and other PRPs can submit comments and/or technical proposals to alert the Agencies to their concerns, the technical bases for these concerns and their proposals for alternate or additional investigations. While the Agencies have briefly delayed the Charnock Group's proposed fieldwork in an area that is in close proximity to an area being investigated by Shell, we do not believe that the Charnock Group will be prejudiced by this delay. Their work plans for supplemental investigations have been approved.

Conclusion

Having responded to the one public comment letter received concerning the AOC, and having determined that none of the issues raised in that comment letter indicate that the AOC is inappropriate, improper or inadequate, this AOC is now final and in effect.

Original Signed By

Jeff Scott, Acting Director
Waste Management Division

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION IX

In the Matter of:)	
)	
Chevron U.S.A. Inc.,)	U.S. EPA Docket No.
Exxon Mobil Corporation,)	RCRA 7003-09-2001-0001
Atlantic Richfield Company,)	
Conoco, Inc., Kayo Oil Company,)	
Douglas Oil Company of)	
California, UNOCAL Corporation,)	
Mobil Oil Corporation,)	
Tosco Corporation,)	
Thrifty Oil Company,)	
Best California Gas, Ltd.,)	
Kazuho Nishida,)	
HLW Corporation, and)	
Winall Oil Company)	
)	
Respondents.)	
_____)	

UNILATERAL ADMINISTRATIVE ORDER
FOR PARTICIPATION AND COOPERATION
IN INITIAL REGIONAL RESPONSE

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Figure 1 – Map of Charnock Sub-Basin Investigation Area

- A. Scope of Work for Interim Regional Response
- B. List of Shell and Respondents' Source Site Facilities

INTRODUCTION

This Order requires Respondents, Chevron USA Inc. ("Chevron"), Exxon Mobil Corporation ("Exxon"), Atlantic Richfield Company (d.b.a. ARCO) ("Arco"), Conoco, Inc. ("Conoco"), Kayo Oil Company ("Kayo"), Douglas Oil Company of California ("Douglas"), Unocal Corporation ("Unocal"), Mobil Oil Corporation ("Mobil"), Tosco Corporation ("Tosco"), Thrifty Oil Company ("Thrifty"), Best California Gas, Ltd. ("Best"), Kazuho Nishida ("Nishida"), HLW Corporation ("HLW"), and Winall Oil Corporation ("Winall") (collectively "Respondents"), to participate and cooperate with parties named in EPA's Administrative Order on Consent ("AOC") dated July 25, 2000 (Docket No. RCRA 7003-09-2000-0003) (hereinafter "the Shell Order") in performing the Initial Regional Responses required by the Scope of Work ("SOW") to that AOC. These Initial Regional Responses are necessitated by the presence of the gasoline additive methyl tertiary-butyl ether ("MTBE") and other gasoline constituents in the Charnock Sub-Basin, formerly a drinking water supply for the City of Santa Monica ("City") and the Southern California Water Company ("SCWC") (collectively "the Impacted Parties"). Respondents have responsibility for releases from gasoline service stations that have discharged MTBE and other gasoline constituents adversely affecting the Charnock Sub-Basin and its beneficial use as a drinking water supply.

I. JURISDICTION AND PROCEDURE

1. This Administrative Order is issued to Respondents Chevron, Exxon, Arco, Conoco, Kayo, Douglas, Unocal, Mobil, Tosco, Thrifty, Best, Nishida, HLW and Winall by the United States Environmental Protection Agency ("EPA") pursuant to the authority vested in the Administrator of EPA by Section 7003 of the Solid Waste Disposal Act, commonly referred to as the Resource Conservation and Recovery Act of 1976, as amended by the Hazardous and Solid Waste Amendments of 1984, 42 U.S.C. Section 6901 et seq. ("RCRA"), which authority has been duly delegated to the Regional Administrator of EPA, Region IX, and redelegated to the Director of the Waste Management Division, Region IX. Notice of this Order has been provided to the State of California ("State"), as may be required by Section 7003(a) of RCRA, 42 U.S.C. Section 6973(a).

II. PARTIES BOUND

1. This Order shall apply to and be binding upon the Respondents identified in paragraph I.1, above, and their directors, officers, employees, agents, successors and assigns and upon all other persons and entities who are under the direct or indirect control of Respondents including, but not limited to, any contractors or independent agents or consultants acting under or for each of the Respondents in performing their obligations under this Order, until such time as the Work to be performed under Section VI has been completed.
2. No change in the ownership or legal status of Respondents, or of any property to which access is required for performance of the Work, will in any way alter Respondents' obligations and responsibilities under this Order.
3. Respondents shall provide a copy of this Order and all other documents approved under or pursuant to this Order which are relevant to conducting the Work to each contractor, sub-contractor, laboratory, or consultant retained to perform any Work under this Order, within five (5) days after the Effective Date of this Order or on the date such services are retained, whichever date occurs later. Respondents shall also provide a copy of this Order to each person representing any Respondent with respect to the Work and shall condition all contracts and subcontracts entered into for that purpose upon performance of the Work in conformity with the terms of this Order. Notwithstanding the terms of any contract, Respondents, and each of them, are responsible for compliance with this Order and for ensuring that their contractors, subcontractors and agents comply with this Order, and perform all Work in accordance with this Order.
4. At all times after service of this Order, Respondents shall provide a copy of this Order to any prospective owners or successors before a controlling interest in Respondents' assets, property rights or stock are transferred to the prospective owner or successor. Respondents shall notify EPA at least seven (7) days prior to such transfer.

III. FINDINGS OF FACT

A. Discovery of MTBE Contamination at Santa Monica's Charnock Wellfield and Shutdown of the Charnock Wellfields

1. In August 1995, the City discovered the gasoline additive MTBE in drinking water supply wells at its Charnock Wellfield, located at 11375 Westminster Avenue, Los Angeles, California.
2. As of August 1995, the City's Charnock Wellfield had five operating municipal supply wells which provided approximately 45% of the drinking water for the City's 87,000 residents (1990 U.S. Census) and approximately 200,000 daytime customers. In 1996, levels of MTBE at the City's Charnock Wellfield rose to more than 600 parts per billion ("ppb") (Well No. 19) and, by June 13, 1996, all of the supply wells at the City's Charnock Wellfield were shut down due to persistent and increasing levels of MTBE contamination. (See Draft Investigation Report, MTBE Contamination, City of Santa Monica Charnock Wellfield, Los Angeles, California prepared by Komex•H2O Science, March 21, 1997, at page 29 and Appendix C.)
3. In October 1996, following the shutdown of the City's Charnock Wellfield, the SCWC, another water purveyor utilizing the Charnock Sub-Basin, shut down its wellfield in the Sub-Basin, in order to avoid drawing the contamination toward the SCWC Wellfield. Prior to this shutdown, SCWC had two operating municipal supply groundwater wells, at 11607 and 11615 Charnock Road, Los Angeles, that provided a portion of the drinking water for approximately 10,000 residences and businesses in Culver City.

B. Water Replacement Quantities and Costs

4. As a result of the discovery of MTBE in the City's Charnock Wellfield and the shutdown of both of the wellfields in the Charnock Sub-Basin, the Impacted Parties began purchasing alternative water supplies from the Metropolitan Water District.
5. The Impacted Parties have documented the costs of water replacement.

6. In 1995, the last full calendar year in which the City and SCWC pumped water from their Charnock Wellfields, the City extracted 6,320 acre feet and SCWC extracted 577 acre feet of water, for a total of 6,897 acre feet.
7. The total extraction for 1995 is consistent with the estimates of "perennial" yield for the Charnock Sub-Basin presented in the June 1992 "Santa Monica Groundwater Management Plan, Charnock and Coastal Sub-Basin" prepared by Kennedy/Jenks, for the City of Santa Monica, the Metropolitan Water District of Southern California, Southern California Water Company, and the West Basin Municipal Water District.
8. Beginning in 1997, Shell Oil Products Company ("Shell Products"), along with Chevron Products Company ("Chevron Products") and Exxon Corporation ("Exxon"), provided water replacement costs to the City and SCWC, for a total of approximately 8,900 acre feet per year, pursuant to temporary settlement agreements. The City's agreement expired on January 6, 2000. SCWC's agreement was cancelled by Shell Products, Chevron Products and Exxon prior to January 6, 2000. Shell Products, Chevron Products and Exxon declined to extend or renew these agreements and to continue providing water replacement.
9. On September 22, 1999, the EPA and the California Regional Water Quality Control Board, Los Angeles Region ("the Regional Board") (collectively "the Agencies") issued parallel administrative orders with identical scopes of work to Shell Oil Company, Shell Products and Equilon Enterprises, LLC (collectively "Shell"). (See the Shell Order, EPA Docket No. RCRA 7003-09-99-0007, and Regional Board Cleanup and Abatement Order No. 99-085.) These orders required Shell to begin providing the Impacted Parties with Replacement Water beginning January 7, 2000, for a period of 5 years. Shell is currently providing Replacement Water to the Impacted Parties pursuant to these orders.
10. All of the Respondents to this Order, except Winall, are also Respondents to an Order dated March 9th, 2000 that requires them to participate and cooperate with Shell in providing water replacement (EPA Docket No. RCRA 7003-09-2000-0002).

C. Charnock Sub-Basin Groundwater Resources and the Hydraulic Interconnection of its Aquifers

1. The City's and the SCWC's Charnock Wellfields (hereinafter "the Charnock Wellfields") draw groundwater from wells constructed within a groundwater basin known as the Charnock Sub-Basin. The Charnock Sub-basin groundwater resources consist of the groundwater in the area bounded by the Santa Monica Mountains to the North, the Ballona Escarpment to the South, the Overland fault to the East, and the Charnock fault to the West.
2. The Charnock Sub-Basin consists of multiple interconnected groundwater bearing layers.
3. When the Charnock Wellfields were in operation, groundwater beneath Respondents' Source Sites was hydraulically upgradient from the Charnock Wellfields.
4. The California Regional Water Quality Control Board, Los Angeles Region, has adopted a Water Quality Control Plan (also know as a Basin Plan) that designated beneficial uses of the Charnock Sub-Basin groundwater, including municipal and domestic supply. (See Revised Water Quality Control Plan for the Los Angeles Region adopted on June 13, 1994.)
5. Geologic investigations within the Charnock Sub-Basin show that fine grained soils (such as clays and silts) between the Silverado aquifer and shallow unnamed aquifer are thin and laterally discontinuous, including in the vicinity of Respondents' Source Site facilities. These soils do not effectively restrict the movement of water or of contaminants vertically between the shallow unnamed aquifer and Silverado aquifer in the vicinity of these sites.
6. The connection between the Silverado aquifer and the shallow unnamed aquifer is shown, inter alia, by the behavior of water levels in both of these saturated zones since groundwater extractions ceased at the City's wellfield in June 1996. Since that time, groundwater elevations in the Silverado aquifer have risen. Saturation of the Silverado aquifer has reduced the downward migration of water from the shallow unnamed aquifer and, as a result, the groundwater elevations in the shallow unnamed aquifer in the Charnock Sub-Basin have also risen. Groundwater elevations in the shallow unnamed aquifer beneath Respondent's Source Site Facilities have also

increased significantly since pumping ceased at the Charnock Wellfields, indicating a hydraulic connection between the Silverado aquifer and the shallow unnamed aquifer.

7. Well construction information for numerous wells installed at several PRP Sites in the Initial Investigation Area indicates that numerous wells created additional pathways for contamination to move from the shallow unnamed aquifer to the drinking water (Silverado) aquifer.
8. The interconnection between the shallow unnamed aquifer and the Silverado aquifer is further addressed in the work of the City's consultant, Kennedy/Jenks. This consultant determined that drainage into the subsurface is a significant source of recharge for the Silverado (drinking water) aquifer. (See Kennedy/Jenks Consultants, 1992, "Santa Monica Groundwater Management Plan, Charnock and Coastal Sub-Basins, June 1992, Final Report," Chapter 4 (Groundwater Budget Estimation), page 4-1.)
9. Similarly, Geomatrix Consultants (Geomatrix), working on behalf of Shell Products, Chevron Products Company, and Exxon Company, U.S.A., determined that water entering the subsurface within the area of the Charnock Sub-basin was a source of recharge to the Silverado aquifer,. (See Geomatrix Consultants, 1997, "Conceptual Hydrogeologic Model, Charnock Wellfield Regional Assessment, Los Angeles, California," December 18, 1997, page 6-1 and Table 6-4.)
10. Geomatrix also performed geologic and statistical analyses of available lithologic boring logs within and near the Charnock Sub-Basin and determined that the aquitard between the shallow unnamed aquifer and the drinking water (Silverado) aquifer is laterally discontinuous. (Geomatrix Consultants, 1998, "Model Layer Revisions," memo to Mr. Steven Linder, USEPA, and Mr. David Bacharowski, RWQCB, July 23, 1998.)

D. The Agencies' Response to the Charnock Sub-Basin MTBE Contamination

11. EPA, in consultation with the State, determined that a joint State and federal response was necessary to effectively protect human health and the environment from the threat created by MTBE contamination in the Charnock Sub-Basin and at the City's Charnock Wellfield. In April 1997, in order to

pursue a coordinated effort to determine the source or sources of the MTBE at the City's wellfield, to remediate this environmental problem, and to restore the Charnock Sub-Basin to its beneficial use as a drinking water supply, EPA and the Regional Board entered into a Memorandum of Understanding ("MOU").

12. Pursuant to the MOU, the Agencies identified thirty (30) potential source facilities ("Potential Source Sites") within an approximate one and one-quarter mile radius of the City's Charnock Wellfield. Two of the Potential Source Sites were gasoline product pipelines, and twenty-eight of the Potential Source Sites were underground storage tank systems ("USTs") where gasoline had been or was being stored. The eleven Source Sites that are the basis of this Order were among the twenty-eight UST facilities identified by the Agencies. These facilities are shown on Figure 1 as PRP Sites Nos. 1, 4, 5, 6, 7, 8, 10, 12, 16, 23, and 30.
13. On June 19, 1997, the Agencies sent parties with responsibility for the Potential Source Sites, including Respondents, letters requiring the production of information, including fieldwork results, in order to determine which of the sites had contributed MTBE affecting the Charnock Sub-Basin. Respondents were required to provide information concerning and to conduct fieldwork at Potential Source Site facilities.
14. The Agencies have sent Respondents letters providing determinations that, as a result of releases of MTBE and other gasoline constituents affecting the Charnock Sub-Basin from Respondents' Source Sites (PRP Site Nos. 1, 4, 5, 6, 7, 8, 10, 12, 16, 23, and 30), Respondents are required to participate in the Regional Response necessary to address MTBE and other gasoline constituent contamination within the Charnock Sub-Basin. The Agencies have attempted to engage Respondents in settlement negotiations; however, these efforts have not resulted in any settlement or any satisfactory offer of settlement from Respondents in the judgment of the Agencies.
15. By letter dated March 10, 2000, the Agencies informed Shell and Respondents Chevron, Exxon, Arco, Conoco, Kayo, Douglas, Unocal, Mobil, Tosco, Thrifty, Best, Nishida, and HLW that the Agencies determined these parties were required to perform Initial Regional Response activities necessary to begin to restore the Charnock Sub-Basin Groundwater Resources to their

beneficial use as a municipal water supply. The Agencies' March 10, 2000 letter offered to enter into agreements with these parties to perform this work. At this time, Winall had not been identified as a party required to share in Water Replacement or the Initial Regional Response activities.

16. Respondents Chevron, Exxon, Arco, Unocal, Mobil, Tosco, Thrifty, and Best provided an offer to perform some of the work required by the March 10, 2000 letter. However, the Agencies determined that this offer did not constitute a good faith offer to perform the required work. Respondents Conoco, Kayo, Douglas, Nishida, and HLW did not offer to perform any of the work required by the March 10, 2000 letter.
17. After receiving an offer from Shell dated March 28, 2000, the Agencies determined that Shell's offer did constitute a good faith offer to perform most of the tasks required by the March 10, 2000 letter and negotiated agreements with Shell to perform the Initial Regional Response work. Shell began performing the work required by these agreements on July 3, 2000, prior to finalization of the agreements.
18. On September 6, 2000 EPA issued a public notice for a proposed Administrative Order on Consent for Initial Regional Response Docket No. RCRA 7003-09-2000-0003 ("AOC") with Shell. During the 30 day public comment period, the Agencies received one public comment. This comment was submitted by Jerry Ross, counsel for Chevron, providing comments on behalf of eight of the Respondents to this order. After reviewing and responding to this comment, the Agencies finalized the AOC on November 15th, 2000.
19. On September 29, 2000, the Regional Board entered into Stipulated Agreement No. 00-064 with Shell, for Shell to perform a scope of work identical to the scope of work incorporated into the AOC.

E. Description of Contaminants of Concern

20. MTBE is a synthetic, volatile, colorless, organic ether, with a turpentine-like taste and odor. The Chemical Abstracts Service ("CAS") registry number for MTBE is 1634-04-4. There are no known naturally occurring sources of MTBE. MTBE contains 18.2 percent oxygen by weight. MTBE was approved as a gasoline additive in 1979. In the 1980's, MTBE was used in

varying amounts as an octane enhancer. Since the passage of the Clean Air Act Amendments of 1990, MTBE has been used in gasoline in increasing quantities as an oxygenate in reformulated gasoline designed to produce cleaner burning fuel. On March 25, 1999, Governor Gray Davis of California issued an Executive Order requiring that MTBE be phased out of gasoline in the State, based on his finding that it posed "a significant risk to the environment" and a "threat to groundwater and drinking water."

21. The fate and transport of MTBE in the subsurface is significantly different from that of the gasoline constituents that have historically been of toxicological concern, specifically the BTEX compounds (benzene, toluene, ethylbenzene, and xylene). Once released into the subsurface, MTBE separates from other gasoline constituents in the presence of moisture. MTBE has a strong affinity for water and does not readily adsorb to soil particles. Rather, MTBE moves with groundwater at approximately the rate of that water's movement. In addition, MTBE is more persistent than the BTEX compounds because it does not readily biodegrade in the subsurface. In comparison to BTEX constituents, MTBE is significantly more mobile in the subsurface and will migrate from the source area more quickly. MTBE is also more difficult and expensive to remove from water than other gasoline constituents.
22. EPA's December 1997 Drinking Water Advisory: Consumer Acceptability Advice and Health Effects Analysis on Methyl Tertiary-Butyl Ether (MTBE) ("1997 EPA Advisory") (Section 7.1) states: "the weight of evidence indicates that MTBE is an animal carcinogen, and the chemical poses a carcinogenic potential to humans (NSTC, 1997, page 4-26)." EPA has identified one of MTBE's metabolites, formaldehyde, as a probable human carcinogen (Group B1). The California maximum contaminant level ("MCL") for MTBE is 13 ppb. California has also promulgated a secondary MCL (based on taste and odor impacts) for MTBE of 5 ppb. No federal MCL for MTBE has yet been adopted. However, EPA's Drinking Water Advisory, issued in 1997, set a level of 20 to 40 ppb for taste and odor. MTBE has been demonstrated to cause hepatic, kidney and central nervous system toxicity, peripheral neurotoxicity and cancer in animals.
23. When released into the environment, MTBE is a solid waste, as that term is used in RCRA Section 7003, 42 U.S.C. Section

6973. MTBE is a listed CERCLA hazardous substance (40 C.F.R. Part 302.4), based on its designation as a hazardous air pollutant under the Clean Air Act (Section 112 of the Clean Air Act, 42 U.S.C. Section 7412).

24. When released into the environment, gasoline constituents are a solid waste, as that term is used in RCRA Section 7003, 42 U.S.C. Section 6973.
25. Gasoline constituents, other than MTBE, have been found at Respondents' Source Sites listed in Attachment D and also pose a significant health threat. Specifically, benzene is a known human carcinogen (Class A) and leukemogen. Its systemic toxicity and carcinogenic effects are manifested in the liver, bone marrow, erythropoietic system and central nervous system. The federal primary MCL for benzene is 5 ppb and the State of California primary MCL for benzene is 1 ppb. Toluene and xylene are organic solvents, which are linked with toxic effects in the central nervous system, the liver, the kidney and the reproductive system. Ethylbenzene has demonstrated hepatic, kidney and central nervous system toxicity. See EPA Integrated Risk Information System (IRIS) 1999. Benzene and toluene are RCRA hazardous constituents as defined at 40 C.F.R. Part 261, Appendix VIII.
26. Tertiary Butyl Alcohol ("TBA")(CAS-75-65-0) is a gasoline constituent, an impurity in commercial grade MTBE, and a breakdown product of MTBE that has been found at some of Respondents' Source Sites. Exposure to TBA elicits both non-cancer and systemic toxic responses, as well as evidence of carcinogenicity. Recent National Toxicology Program (NTP) findings have suggested that TBA demonstrates carcinogenic activity in two rodent species [NTP Technical Report #436. 1994. NIH, U.S. DHHS]. Further, formaldehyde is an in vivo metabolic product of TBA exposure, and U.S. EPA has determined that formaldehyde is a Probable Human Carcinogen (class B1) [U.S. EPA Integrated Risk Information System, 1991]. Morphologic changes in thyroid follicular cells, in addition to renal tubular nephropathy have been observed in experimental animals exposed to TBA [Cirvello, J.D. et al. 1995. Toxicol. Indus. Health]. Reduced weight gain and increased mortality has also been observed in experimental animals exposed to high concentrations of TBA in their drinking water. California's Office of Environmental Health Hazard Assessment has conducted an interim assessment based on preliminary calculations of the carcinogenicity of TBA,

concluding that exposures to TBA via the oral route represent a one in a million excess cancer risk at 12 ppb. Based on this assessment, California has set an Action Level for TBA of 12 ppb.

27. Potential exposure pathways for Charnock Sub-Basin groundwater containing MTBE and other gasoline constituent contamination are as follows: ingestion or inhalation of, or direct contact with, groundwater containing dissolved contaminants.
28. EPA has determined that the release, threat of release and presence of MTBE and other gasoline constituents in the Charnock Sub-Basin may present an imminent and substantial endangerment to health and the environment as those terms are used in RCRA Section 7003, 42 U.S.C. Section 6973.

F. Respondents' Status

29. Respondent Chevron is a corporation, incorporated in the State of Pennsylvania.
30. Respondent Exxon is a corporation, incorporated in the State of Nebraska.
31. Respondent Arco is a corporation, incorporated in the State of Delaware.
32. Respondent Conoco is a corporation, incorporated in the State of Delaware.
33. Respondent Kayo is a corporation, incorporated in the State of Delaware.
34. Respondent Douglas is a corporation, incorporated in the State of California.
35. Respondent Unocal is a corporation, incorporated in the State of Delaware.
36. Respondent Mobil is a corporation, incorporated in the State of Nebraska.
37. Respondent Tosco is a corporation, incorporated in the State of Nebraska.

38. Respondent Thrifty is a corporation, incorporated in the State of California.
39. Respondent Best is a limited partnership, registered in the State of California.
40. Respondent Nishida is a person, residing in the State of California.
41. Respondent HLW is a corporation, incorporated in the State of California.
42. Respondent Winall is a corporation, incorporated in the State of California.

G. Respondents' Source Site Facilities' Ownership, Leasehold Interests, Operation and Releases

PRP SITE No. 1 - Exxon

1. Humble Oil & Refining Company (a predecessor in interest to Exxon Corporation) purchased a portion of the property at 11284 Venice Boulevard ("PRP Site No. 1") from Catherine Boos and Gladys Skulth on April 6, 1970 and another portion of the property from Judith Kushner on May 5, 1970. (See Grant Deeds provided in Exxon's July 24, 1997 Information Request Response ("PRP Site No. 1 Information Request Response") to the Agencies' June 19, 1997 Information Request.)
2. In the narrative portion of the PRP Site No. 1 Information Request Response, Exxon states that "Exxon Corporation, through its division Exxon Company USA owned the property at 11284 Venice Boulevard, Culver City, California from sometime prior to January 1, 1980 until February 2, 1995." On February 2, 1995, Mr. Azizedin Taghizadeh purchased the property from Exxon. Exxon's narrative also states "On February 2, 1995, Mr. Azizedin Taghizadeh purchased the underground storage tanks and associated piping from Exxon."
3. Culver City Fire Department records indicate that PRP Site No. 1 was operated as a gasoline service station by Humble Oil Company since 1970. (See, October 14, 1998 Final Site

Investigation Report prepared by Acton Mickelson
Environmental ("AME Report") for Exxon, at page 1.)

4. The AME Report also stated that the Culver City Fire Department records indicate that the four USTs installed in 1971 (one 1,000 gallon used oil, one 6,000 gallon premium unleaded gasoline, one 8,000 gallon unleaded gasoline, and one 10,000 gallon regular leaded gasoline) were removed in January 1989. The AME Workplan indicates that the four USTs currently at the site (one 1,000 gallon used oil, two 10,000 gallon containing super and plus unleaded gasoline, and one 12,000 regular unleaded gasoline) were installed in January 1989. (See AME Report at page 2.)
5. On April 8, 1992, Jay Kruger of Exxon Company USA completed a UST Unauthorized Release (Leak)/Contamination Site Report for PRP Site No. 1. The Report indicated that a gasoline release was discovered on April 7, 1992 as part of a site investigation.
6. In response to the Agencies' June 19, 1997 Information Request, Exxon provided a Site Investigation and Cleanup History form for PRP Site No. 1. On this form, Exxon documented that PRP Site No. 1 had an unauthorized release that contaminated soil at the site with gasoline constituents.
7. The release history of PRP Site No. 1, along with the October 14, 1998 Final Site Investigation Report and the September 22, 1999 Quarterly Monitoring Report, documents that PRP Site No. 1 has released gasoline containing MTBE that has impacted soil and groundwater. (See Final Site Investigation Report Table 4, See Quarterly Monitoring Report Table 3, September 22, 1999.)
8. On December 3, 1999, Exxon Corporation filed with the California Secretary of State for a name change from Exxon Corporation to Exxon Mobil Corporation.
9. Exxon is a past owner and/or operator of a facility, and has contributed to disposal within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 1.

PRP Site No. 4 - Arco

1. On March 26, 1947, Richfield Oil Corporation, a predecessor in interest to Arco, obtained ownership of the property for ARCO Site No. 1246 (PRP Site No. 4) located at 11181 West Washington Blvd., Culver City, California, from Kenneth and Neva Smith. (See PRP Site No. 4 Information Request Response, Grant Deed, dated March 26, 1947.)
2. On August 14, 1991, Richard C. Spake of ARCO Petroleum Products Company, a division of Arco, completed a UST Permit Application - Form A (Form). The Form designates ARCO Petroleum Products Company as the property owner of PRP Site No. 4 and the owner of the tanks.
3. Gasoline service station operations began at PRP Site No. 4 in 1965. Three (one 6,000 gallon and two 4,000 gallon) single-walled steel underground storage tanks (USTs) were installed at the site during that year. (See November 5, 1989 tank information report provided by Arco Products Company (a predecessor in interest to Arco) to EPA and Richfield Oil Corporation As-Built drawing, revised October 2, 1989 drawing by ARCO Products Company, provided to EPA.)
4. By letter dated August 15, 1996, ARCO Products Company informed the Regional Board that PRP Site No. 4 has operated as a gasoline service station since at least January 1, 1980.
5. On August 30, 1990, David Esfandi of the LA County Department of Public Works completed a UST Unauthorized Release (Leak)/Contamination Site Report for PRP Site No. 4. The Report indicated that a gasoline release was discovered at the site during a May 24, 1990 tank removal.
6. In response to the Agencies' June 19, 1997 Information Request, Arco provided a Site Investigation and Cleanup History form for PRP Site No. 4. On this form Arco documented that PRP Site No. 4 had an authorized release of gasoline due to a leaking UST that contaminated soil and groundwater at the site with gasoline constituents.
7. The release history of PRP Site No. 4, along with the March 27, 1998 Technical Summary Report and the October 14, 1999 Quarterly Monitoring Report, documents that PRP Site No. 4 has released gasoline containing MTBE that has impacted

soil and groundwater. (See Technical Summary Report, Table 2, and Quarterly Monitoring Report, Table 2.)

8. Arco is currently incorporated as Atlantic Richfield Company. (See Arco's Securities and Exchange Commission Filing 10-K/A for the fiscal year ended December 31, 1998.) Arco Products Company, Inc. filed its certificate of dissolution with the California Secretary of State on December 23, 1996.
9. Arco is a past owner and/or operator of a facility, and has contributed to disposal within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at Site No. 4.

PRP Site No. 5 - Chevron

1. Audrey Joan Brachman and Patricia Ann Battat, owners of the property at 11197 Washington Place (PRP Site No. 5), leased this property to Standard Oil Company (predecessor in interest to Chevron) for the period between April 1, 1971 and October 31, 1991. (See January 4, 1971 lease provided in Chevron's July 24, 1997 Information Request Response ("PRP Site No. 5 Information Request Response").)
2. The January 4, 1971 lease indicated that Standard Oil Company was to pay the property owners a rental cost, determined in part by the amount of gasoline delivered to the property. The lease also states that "[l]essee [Standard Oil Company] expects to commence service station construction hereunder within 90 days after possession is delivered to Lessee as provided. . . ." On February 2, 1975, Standard Oil Company received a permit from the Los Angeles County Air Pollution Control District to install and operate a gasoline dispensing facility vapor recovery system for 3 tanks and 9 dispensers at the site. This information indicates that the property has been utilized as a gasoline service station since the early 1970's.
3. William F. Fulton operated the gasoline station at PRP Site No. 5 under a franchise agreement with Standard Oil Company that expired on December 29, 1982. Mr. Fulton also entered into a lease with Chevron. (See January 26, 1980 Lease.) As of 1997, Paul Ha was the "Dealer of Record" for PRP Site

- No. 5. (See Chevron's Information Request Response for PRP Site No. 5.)
4. In May 1991, Chevron notified Audrey Bachman and Patricia Battat that, "[i]n accordance with the provision set forth in said lease [the January 4, 1971 lease] we hereby notify you that we elect to extend the lease for a further period of five years, commencing November 1, 1991 and ending September 30, 1996."
 5. On July 22, 1994, S.M. Sessung of Chevron U.S.A. Products Company completed a UST Permit Application - Form A for PRP Site No. 5 ("Form"). The Form indicated that the facility was designated as Chevron Station 9-2894 and indicated that the tank owner was Chevron U.S.A. Products Company.
 6. In October, 1996, during tank replacement activities, Chevron identified gasoline contaminated soils in the tank pit area of the former tanks.
 7. In Chevron's narrative response to the Agencies' June 19, 1997 Appendix B Information Request, Chevron listed the owner of the tanks at PRP Site No. 5 as Chevron Products Company.
 8. In response to the Agencies' June 19, 1997 Information Request, Chevron provided a Site Investigation and Cleanup History form for PRP Site No. 5. On this form, Chevron documented that PRP Site No. 5 had an unauthorized release that contaminated soil beneath the site with gasoline constituents, including MTBE.
 9. The release history of PRP Site No. 5, along with the August 24, 1999 Additional Site Assessment Report, documents that PRP Site No. 5 has released gasoline containing MTBE that has impacted soil and groundwater. (See August 24, 1999 Additional Site Assessment Report, Tables 3 and 4).
 10. Chevron is a past owner and/or operator of a facility, and has contributed to disposal within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at Site No. 5.

PRP Site No. 6 - Conoco, Kayo and Douglas

1. Respondent Douglas, a wholly-owned subsidiary of Respondent Conoco, leased the property at 11198 Washington Place, Culver City (PRP Site No. 6) on March 21, 1962 from Nathan Levy and Florence Levy, in order to operate a gasoline service station. On or about March 1, 1977, Douglas again leased the service station property from David and Florence Levy, as Co-Trustees of the Residual Trust created pursuant to the Will of Nathan Levy. On September 1, 1978, Douglas entered into a sublease of the property to Oasis Petro Energy Corporation. Oasis Petro Energy was also known as Oasis Petroleum Corporation. On October 13, 1982, Douglas agreed to assignment of the sublease to other entities including a partnership called Pacific Oasis. By 1984, Paramount Petroleum Corporation had become a successor in interest to Oasis Petroleum Corporation. Paramount filed for bankruptcy on June 24, 1984. On July 6, 1984, Douglas agreed to an assignment of the sublease to George Adamian, which continued through the end of the period of Douglas's lease in April 1992.
2. On January 15, 1987, Douglas assigned all of its interest in PRP Site No. 6 to another wholly-owned subsidiary of Conoco, Respondent Kayo Oil Company.
3. Douglas acquired a property interest in PRP Site No. 6 by leasing that property. In addition, Respondent Douglas agreed, in its March 1, 1977 Service Station Ground Lease, "to indemnify and hold Lessor harmless from any claim or liability for injury or death of persons or damage to property arising in any manner from Lessee's use or occupancy of the leased premises." The Lease also provided that the Douglas would "promptly comply with all requirements of any public authority for the correction of any condition concerning the leased premises." The Lease specified that the property was to be surrendered to Lessor, at the end of the lease period "in as good condition as received."
4. On September 4, 1992, Gregory P. Fletcher of Conoco, Inc. completed a UST Unauthorized Release (Leak)/Contamination Site Report. The Report indicated that a gasoline release was discovered on September 2, 1992 as a part of tank removal activities at PRP Site No. 6.

5. In response to the Agencies' June 19, 1997 Information Request, Conoco provided a Site Investigation and Cleanup History for PRP Site No. 6. On this form, Conoco documented that PRP Site No. 6 had an unauthorized release that contaminated soil and groundwater at the site with gasoline constituents.
6. The release history of PRP Site No. 6, along with the February 13, 1998 Site Investigation Report and the July 15, 1999 Quarterly Monitoring Report, document that PRP Site No. 6 has released gasoline containing MTBE that has impacted soil and groundwater (See Site Investigation Report, Table 2, and Quarterly Monitoring Report, Table 3.)
7. As a result of its lease of the property, Douglas is a past owner and/or operator of a facility, and has contributed to disposal within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973. As a result of its assumptions of the leasehold rights and responsibilities of Douglas, Kayo is a past owner and/or operator of a facility, and has contributed to disposal within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, at PRP Site No. 6.
8. As described further in the April 22, 1999 Unilateral Administrative Order, Docket No. RCRA-7003-09-99-0004, Respondent Conoco assumed liability to the owner of the fee title to the real property at PRP Site No. 6 to respond to gasoline-related contamination that resulted from service station operations at that location. As a result of its assumption of the responsibilities of its subsidiaries, as well as its activities at PRP Site No. 6, Respondent Conoco is an owner and/or operator of a facility, and has contributed to disposal, within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 6.

PRP Site No. 7 - Unocal

1. Between 1964 and May 1987, Union Oil Company of California sub-leased the property at 11203 Washington Place in Culver City (PRP Site No. 7). After May 1987, Unocal obtained ownership of PRP Site No. 7. (See Unocal's July 24, 1997 response to Agencies' June 19, 1997 Information Request ("PRP Site No. 7 Information Request Response") at page 1.)

2. PRP Site No. 7 began operation as a gasoline service station as early as 1964, when two 4,000 gallon USTs were installed at the site. These tanks were removed in 1985, and two 12,000 gallon USTs were installed at the site. These 12,000 gallon USTs stored unleaded gasoline until they were removed in either 1993 or 1994. (See PRP Site No. 7 Information Request Response at pages 1 and 4.)
3. On June 14, 1992, Nancy Drew of the Los Angeles County Department of Public Works completed a UST Unauthorized Release (Leak)/Contamination Site Report. The Report indicated that releases of premium and regular unleaded gasoline were discovered on March 25, 1992 as a part of subsurface monitoring activities at the site.
4. In response to the Agencies' June 19, 1997 Information Request, Unocal provided a Site Investigation and Cleanup History for PRP Site No. 7. On this form, Unocal documented that PRP Site No. 6 had an unauthorized release that contaminated soil and groundwater with gasoline constituents.
5. The release history of PRP Site No. 7, along with the March 30, 1998 Site Assessment Report, documents that PRP Site No. 7 has released gasoline containing MTBE that has impacted soil and groundwater (See Site Assessment Report, Tables 1A, 2, and 4.)
6. Unocal is an owner and/or operator of a facility, and has contributed to disposal, within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 7.

PRP Site No. 8 - Mobil

1. A July 24, 1964 Service Station Ground Lease indicates that Socony Mobil Oil Company, Inc. rented the property at 3800 Sepulveda Boulevard in Culver City from Suzanne Lawrence for a period of 15 years commencing on January 1, 1965. The Ground Lease included provision for the rental payment to be dependent, in part, on the volume of gasoline delivered to the property.
2. According to a Grant Deed provided by Mobil, Mobil Oil Corporation obtained the property at 3800 Sepulveda

Boulevard in Culver City (PRP Site No. 8) from Suzanne Schaefer on March 2, 1984.

3. Mobil Oil Corporation entered into a Service Station Lease with Adli Abdelsayed on March 26, 1985. On April 15, 1988, Mobil Oil Corporation entered into another service station lease with Adli Abdelsayed. On August 2, 1996, Mobil Oil Corporation entered a "Petroleum Marketing Practices Act" Fuels Franchise Agreement with Adli Abdelsayed.
4. According to a September 8, 1997 letter from Mobil Business Resources Corporation to the Regional Board, "Mobil Oil Corporation is the owner of the underground storage tanks used to store gasoline at Mobil Service Station 18-FX5 [PRP Site No. 8.]"
5. On August 14, 1990, Sheila A. Malloy of Mobil completed a UST Unauthorized Release (Leak)/Contamination Site Report. The Report indicated that a release of gasoline was discovered on August 9, 1990 during subsurface monitoring activities.
6. In response to the Agencies' June 19, 1997 Information Request, Mobil provided a Site Investigation and Cleanup History form for PRP Site No. 8. On this form, Mobil documented that PRP Site No. 8 had an unauthorized release of gasoline that contaminated soil and groundwater at the site with gasoline constituents.
7. The release history of PRP Site No. 8, along with the February 23, 1998 Subsurface Investigation Report, documents that PRP Site No. 8 has released gasoline containing MTBE that has impacted soil and groundwater. (See Subsurface Investigation Report, Tables 2-2 and 4-3).
8. Mobil is an owner and/or operator of a facility, and has contributed to disposal, within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 8.

PRP Site No. 10 - Chevron

1. A March 2, 1964 lease indicates that Standard Oil Company leased the property at 3775 Sepulveda Boulevard in Los

Angeles (PRP Site No. 10) from Harold Merton Jack, the Estate of Hayward Davidson Jack, and Norma Alice Logan.

2. On January 17, 1980, Chevron U.S.A. Inc. extended the March 2, 1964 lease with the successors to the landowners of the PRP Site No. 10 property, listed as Greta H. Jack, Norma Alice Logan, Patricia Jean Cowie, and Nancy Merrill. The lease was subsequently modified, amended, and/or extended on January 24, 1985, December 11, 1989, and July 1, 1994 by the subsequent property owners and Chevron U.S.A. Inc.
3. In Chevron's narrative response to the Agencies' June 19, 1997 Appendix B Information Request, Chevron listed the owner of the tanks at PRP Site No. 10 as Chevron Products Company.
4. In response to the Agencies' June 19, 1997 Appendix B Information Request, Chevron Products Company provided a Site Investigation and Cleanup History for PRP Site No. 10. On this form, Chevron documented that PRP Site No. 10 had an unauthorized release of gasoline which contaminated soil at the site with gasoline constituents (including MTBE) and groundwater at the site with gasoline constituents.
5. The release history of PRP Site No. 10, along with the June 10, 1998 Site Assessment Report and the January 14, 2000 Quarterly Monitoring Report, documents that PRP Site No. 10 has released gasoline containing MTBE that has impacted soil and groundwater. (See Site Assessment Report, Tables 6 and 9, and Quarterly Monitoring Report, Table 3).
6. Chevron is an owner and/or operator of a facility, and has contributed to disposal, within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 10.

PRP Site No. 12 - Winall

1. On October 20, 1975, E-Z Fil, Incorporated, as the lessee, entered into a lease with property owner Laurine L. Keeler to use the property at 10646 Venice Boulevard ("PRP Site No. 12") for a self-service gas station. (See Lease provided in Winall's July 25, 1997 Information Request Response ("PRP Site No. 12 Information Request Response") to the Agencies' June 19, 1997 Information Request.)

2. Five 12,000 gallon single wall steel USTs were installed at the site sometime after October 1976 and before January 1, 1977. (See October 20, 1975 lease, Winall responses to items 11 and 12 in the PRP Site No. 12 Information Request Response, and August 29, 1997 Technical Report of Tank Removal and Soil Investigation.)
3. On December 31, 1976, E-Z Fil assigned its lease for PRP Site No. 12 to Winall Oil Company (Winall). Winall took over operation of the service station at PRP Site No. 12 on January 1, 1977. (See Winall responses to items 11 and 12 in the PRP Site No. 12 Information Request Response and pp. 1-2 of the October 10, 1997 Revised Workplan for Further Site Assessment.)
4. On November 4, 1994, Allen Gimenez of Winall Oil Co. completed a UST Unauthorized Release (Leak)/Contamination Site Report for PRP Site No. 12. The Report indicated that a gasoline release was discovered on October 28, 1994 during a soil gas survey.
5. On July 25, 1997, Winall provided a Site Investigation and Cleanup History form for PRP Site No. 12 to the Agencies. On this form, Winall documented that PRP Site No. 12 had an unauthorized release that contaminated soil at the site with gasoline constituents. (See PRP Site No. 12 Information Request Response.)
6. The release history of PRP Site No. 12, along with the August 29, 1997 Technical Report of Tank Removal, the May 5, 1998 Report of Further Site Assessment and Contaminated Soil Investigation, and the July 28, 2000 Quarterly Monitoring Report documents that PRP Site No. 12 has released gasoline containing MTBE that has impacted soil and groundwater. (See Technical Report of Tank Removal and Contaminated Soil Investigation Enclosure No. 2 Laboratory Data Table, Report of Further Site Assessment Table Laboratory Data Tables, and Quarterly Monitoring Report Table 2).
7. Winall is an owner and/or operator of a facility, and has contributed to disposal, within the meaning of RCRA Section 7003, 42 U.S.C. 6973, with respect to releases at PRP Site No. 12.

PRP Site No. 16 - Tosco and Unocal

1. Beginning prior to January 1, 1980, Union Oil Company of California owned the property at 11280 National Boulevard in Los Angeles (PRP Site No. 16). On April 1, 1997, Tosco purchased PRP Site No. 16 as a part of Tosco's acquisition of Unocal's west coast refining and marketing assets. (See Tosco's response to Agencies' June 19, 1997 Information Request ("PRP Site No. 16 Information Request Response"), page 2.)
2. Gasoline service station operations at the site began as early as 1953, when the Los Angeles Fire Department granted a permit to Union Oil for the installation of two 6,000 gallon and one 280 gallon UST. In 1992, these three tanks, as well as three additional 10,000 gallon USTs, were removed from the site. Also in 1992, two 12,000 gallon USTs and one 550 gallon waste oil UST were installed at the site and are currently in operation. (See PRP Site No. 16 Information Request Response, pp. 5-6.)
3. In response to the Agencies' June 19, 1997 Information Request, Tosco provided an incomplete (only page 1 of 2 pages were provided) Site Investigation and Cleanup History for PRP Site No. 16. On this form, Tosco documented that PRP Site No. 16 had an unauthorized release of gasoline that contaminated soil at the site with gasoline constituents.
4. The release history of PRP Site No. 16, along with the March 30, 1998 Site Investigation Report and the 4th Quarter 1999 Quarterly Groundwater Monitoring Report, documents that PRP Site No. 16 has released gasoline containing MTBE that has impacted soil and groundwater. (See Site Investigation Report, Table 2, and Quarterly Monitoring Report, Table 1B).
5. Tosco and Unocal are owners and/or operators of a facility, and have contributed to disposal, within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 16.

PRP Site No. 23 - Chevron, Thrifty and Best

1. On March 27, 1969, Gulf Oil Corporation ("Gulf") acquired ownership of the property and fixtures (including the UST system) located at 3505 Sepulveda Boulevard (PRP Site No. 23").
2. On May 3, 1978, Gulf leased the service station at PRP Site No. 23 to Mr. Aram Shishmanian.
3. On July 1, 1985, as a result of the merger between Gulf Oil Corporation and Chevron U.S.A. Inc., Chevron U.S.A. Inc. acquired ownership of the property and fixtures (including the UST system) located at PRP Site No. 23.
4. On September 1, 1989, Chevron U.S.A. Inc. notified Mr. Shishmanian, as the party occupying and controlling the premises at PRP Site No. 23, of the importance of complying with health, safety, and environmental laws relating to management of gasoline at the service station.
5. On August 31, 1990, Best California Gas, Ltd., a California Limited Partnership acquired the ownership of the property (including the UST system) located at PRP Site No. 23. The USTs at the site were not operated between September 13, 1990 and the date they were removed. In or about November 1990, three new USTs and associated piping were installed. By January 1991, Thrifty had begun operating the USTs at PRP Site No. 23.
6. In response to the Agencies' June 19, 1997 Information Request, Chevron provided a Site Investigation and Cleanup History for PRP Site No. 23. On this form, Chevron documented that PRP Site No. 23 had an unauthorized release of gasoline from USTs and product lines that contaminated soil at the site with gasoline constituents.
7. The release history of PRP Site No. 23, along with the June 25, 1999 Site Assessment Report and the January 14, 2000 Quarterly Monitoring Report, documents that PRP Site No. 23 has released gasoline containing MTBE that has impacted soil and groundwater. (See Site Assessment Report, Tables 2 and 3, and Quarterly Monitoring Report, Tables 2 and 4.)
8. Chevron, Thrifty and Best are owners and/or operators of a facility, and have contributed to disposal, within the

meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 23.

Site No. 30 - Nishida and HLW

1. HLW Corporation has owned the property at 11166 Venice Blvd., in Culver City ("PRP Site No. 30") since July 6, 1955. (See Grant Deed, dated July 6, 1955.)
2. HLW Corporation has leased PRP Site No. 30 for use as an automobile washrack and gasoline sales station since February 22, 1957. (See lease with Henry Siegel and Sylvia Siegel dated February 22, 1957.)
3. On June 1, 1978, Harold Tarlov, Roland Weber, and Kazuho Nishida entered into a Partnership Agreement to operate several facilities, including PRP Site No. 30.
4. On October 29, 1981, Vernon W. Maynard, Steven Springer, Brian E. Brooks and James Michael Welch, with the consent of HLW Corporation, assigned their sublease for PRP Site No. 30 to Kazuho Nishida and Arnold Fung.
5. According to the narrative response to the Agencies' June 19, 1997 Information Request (prepared on behalf of Nishida & Fung by Kazuho Nishida's attorney J. Sheila Welch), a permit was issued to Siegel for installation of three 4,000 gallon gasoline tanks on August 23, 1957.
6. The facility operated as a gasoline station up until August 17, 1988. (See June 1, 1999 Site Assessment Report, page 4.)
7. On July 26, 1990, David Esfandi of the Los Angeles County Department of Public Works completed a UST Unauthorized Release (Leak)/Contamination Site Report. The Report indicated that a release of gasoline was discovered on June 26, 1990 during tank removal activities.
8. In response to the Agencies' June 19, 1997 Information Request, J. Sheila Welch (on behalf of Kazuho Nishida) provided a Site Investigation and Cleanup History form which documents that PRP Site No. 30 had an unauthorized release of gasoline suspected to have been from a hole in

one tank which contaminated soil beneath the site with gasoline constituents.

9. Union Oil Company of California ("Union" or "Unocal") and Arnold M. Fung & Kazuho Nishida a Partnership d.b.a. Great West Car Wash entered into a fuel purchasing contract on August 1, 1985. This contract included terms which required Union to sell and deliver to Great West Car Wash at 11166 Venice Boulevard (PRP Site No. 30) Union 76 Super gasoline (as well as Union 76 Unleaded, Regular and diesel fuels) for the period between October 1, 1985 and September 30, 1988. (See August 1, 1985 Retail Motor Fuel Purchase Contract R-0566, page 1, provided by J. Sheila Welch in response to the Agencies' June 19, 1997 Information Request.)
10. In an August 14, 1996 letter to Robert Ghirelli, Executive Director of the Regional Board, Robert A. Matson, Environmental Compliance Coordinator for Unocal, stated that Unocal began adding MTBE as an additive to Unocal gasoline in October 1986. Mr. Matson provided a sales record of MTBE that documents that Arco Chemical sold MTBE to Unocal (at a Los Angeles, CA location) in October 1986. (See August 14, 1996 letter from Mr. Matson to Robert Ghirelli, page 3 and Appendix A.) In an internal Unocal memo, Scott A. Stout stated that Unocal began adding MTBE in automotive fuels in California in the spring of 1986. Mr. Stout stated that "its [MTBE's] use was originally as a octane booster in our [Unocal's] new Premium Unleaded (92 octane) gasoline which we began producing at that time [Spring of 1986]." (See November 11, 1996 memo from Scott A. Stout, Ph.D. to Brian Kelly, page 2.)
11. On December 11, 1986, Associated Environmental Systems, Inc. (AES) performed a precision tank & line test on two 4,000 gallon tanks and lines at PRP Site No. 30. In a table presenting the tank test results, the two 4,000 gallon tanks were designated as storing "Prem." Product. (See December 11, 1986 AES Precision Tank & Line Test Results provided with PRP Site No. 30 Response to Agencies' June 19, 1997 Information Request Response.)
12. In December 1989, Remedial Management Corporation ("RMC") removed four underground storage tanks from PRP Site No. 30. During the tank removal, RMC noted that the "northernmost 4,000 gallon tank [had] holes on the west end

near the top and on the side, halfway up." The two 4,000 gallon tanks at the site (including the northernmost tank referred to above) were approximately 32 years old at the time of removal and stored super unleaded fuel when they were in operation. Analytical results of soil samples taken beneath the northernmost 4,000 gallon UST at the time of the tank removal showed evidence of gasoline contamination. (See January 25, 1990 UST Removal Report for J. Sheila Welch at the Site of Great West Car Wash, Pages 2 and 3, Table 1, and Figure 3.) Based, inter alia, on the above information, EPA has determined that PRP Site No. 30 has had a release of gasoline containing MTBE.

13. The release history of PRP Site No. 30, along with the June 1, 1999 Site Assessment Report, documents that PRP Site No. 30 has released gasoline containing MTBE that has impacted soil and groundwater. (See Site Assessment Report, Table 5).
14. Nishida and HLW are owners and/or operators of a facility, and have contributed to disposal, within the meaning of RCRA Section 7003, 42 U.S.C. Section 6973, with respect to releases at PRP Site No. 30.

IV. CONCLUSIONS OF LAW AND DETERMINATION

Based on the Findings of Fact set forth above, EPA has concluded and determined that:

1. Respondents are "persons" as defined in Section 1004(15) of RCRA, 42 U.S.C. Section 6903(15) and 40 C.F.R. Section 260.10, whose past or present handling, storage, treatment, transportation or disposal of "solid wastes" as defined by Section 1004(27) of RCRA, 42 U.S.C. Section 6903(27), have contributed to a condition which may present an imminent and substantial endangerment to health or the environment under Section 7003 of RCRA, 42 U.S.C. Section 6973.
2. Respondents, and each of them, are or were an owner and/or operator of a facility where past or present handling, storage, treatment, transportation or disposal of a solid waste resulted in discharges or releases of MTBE and other gasoline constituents. These discharges or releases have contributed to contamination that may present an imminent and

substantial endangerment to health or the environment, within the meaning of Section 7003 of RCRA, 42 U.S.C. Section 6973.

3. MTBE and other gasoline constituents released from Respondents' Source Site Facilities listed in Attachment D, are "solid wastes" as defined by Section 1004(27) of RCRA, 42 U.S.C. Section 6903(27). These releases may present an imminent and substantial endangerment to health or the environment under Section 7003 of RCRA, 42 U.S.C. Section 6973.
4. The performance of the Initial Regional Response tasks specified in the SOW is necessary to mitigate the imminent and substantial endangerment posed by the MTBE and other gasoline constituent contamination of the Charnock Sub-Basin.
5. Issuance of this Order is necessary to insure the restoration of the Charnock Sub-Basin to its beneficial use as a drinking water supply.
6. Respondents are jointly and severally liable under Section 7003 of RCRA, 42 U.S.C. Section 6973, for performing the Initial Regional Response tasks required in the SOW.
7. Based on the foregoing FINDINGS OF FACT AND CONCLUSIONS OF LAW, and on the Administrative Record, the Director of the Waste Management Division of EPA, Region IX, has determined that issuance of this Order is necessary to protect public health and the environment.

ORDER

Based on the foregoing FINDINGS OF FACT AND CONCLUSIONS OF LAW, the Administrative Record, and the foregoing determinations, it is hereby ORDERED that:

1. Respondents shall fully cooperate with EPA and its authorized representatives in carrying out the provisions of this Order, including the taking of all actions set forth below within the time periods and in the manner prescribed by this Order and in the attached Scope of Work (SOW), provided as Attachment A.
2. Effective immediately upon receipt of this Order, Respondents, and each of them, shall take no action in the Charnock Sub-

Basin Investigation Area in connection with the MTBE and other gasoline constituent contamination other than those actions required or permitted by EPA and/or the Agencies. Nothing in this Order shall relieve Respondents of their obligation to perform all tasks related to their individual Source Sites as required by the Agencies' June 17, 1997 letters to each Respondent, as amended and supplemented by subsequent Agencies' correspondence. In addition, for those Respondents that are named in EPA's March 9, 2000 Order (EPA Order Docket No. RCRA 7003-09-2000-0002), nothing in this Order shall relieve those Respondents of their obligation to perform all tasks required by that Order.

3. Nothing in this Order is intended to affect any obligation imposed on any Respondent as a result of any agreement between one or more Respondents and the Impacted Parties.

V. DEFINITIONS

Unless otherwise expressly provided herein, terms used in this Order which are defined in RCRA shall have the meanings assigned to them in that Act. Whenever the terms listed below are used in this Order, the following definitions apply:

1. "Agencies" shall mean either the United States Environmental Protection Agency, or the California Regional Water Quality Control Board, Los Angeles Region, and the United States Environmental Protection Agency, acting jointly.
2. "Charnock Sub-Basin" shall mean the area of Los Angeles and Culver City bounded by the Overland Fault to the east, the Ballona escarpment to the south, the Charnock Fault to the west, and the base of the Santa Monica Mountains to the north.
3. "Charnock Sub-Basin Investigation Area" shall mean the approximately one and one-quarter mile radius area investigated by the Agencies in order to locate potential sources of the MTBE contamination at the City of Santa Monica's Charnock Wellfield.
4. "Charnock Wellfields" shall mean the drinking water supply wells operated by the City of Santa Monica at 11375 Westminster Avenue, Los Angeles, and the drinking water wells operated by the Southern California Water Company at 11607 and 11615 Charnock Road, Los Angeles.

5. "City" shall mean the City of Santa Monica, an Impacted Party.
6. "Days" shall mean calendar days, unless otherwise specified.
7. "EPA" shall mean the United States Environmental Protection Agency.
8. "Groundwater" shall mean the subsurface water that fills available openings in rock and/or soil materials such that they may be considered saturated.
9. "Impacted Parties" shall mean the City of Santa Monica and the Southern California Water Company.
10. "MCL" shall mean a federal or State promulgated standard for the Maximum Contaminant Level of a particular chemical when present in water to be served for domestic use by a public water system.
11. "Methyl Tertiary-Butyl Ether" or "MTBE" shall mean the chemical whose CAS registry number is 1634-04-4.
12. APotential Source Sites@ shall mean the underground gasoline storage tank systems and gasoline product pipelines and the property on which they are located within the Charnock Sub-Basin Investigation Area identified on Figure 1 to this Consent Order.
13. "Ppb" shall mean parts per billion. Note that in some instances when this unit of measurement has been used for soil samples it represents a conversion from the original units in which the analyses of the chemical contents at issue were presented as either milligrams or micrograms per kilogram. Further, in some instances when this unit of measurement has been used for groundwater samples it represents a conversion from the original units in which the analyses of the chemical contents at issue were presented as either milligrams or micrograms per liter.
14. "RCRA" shall mean the Resource Conservation and Recovery Act (also referred to as the Solid Waste Disposal Act), as amended, 42 U.S.C. Sections 6901, et seq.
15. "Regional Board" shall mean the California Regional Water Quality Control Board, Los Angeles Region.

16. "Regional Response" shall mean the actions that are determined by the Agencies to be necessary to address the MTBE and other gasoline contamination of the Charnock Sub-Basin beyond those actions required to be taken at individual Source Sites or Potential Source Sites. Initial Regional Response tasks shall mean those Regional Responses specified in the SOW provided as Attachment A.
17. "Release(s)" shall mean discharge(s) or disposal as those terms are used in RCRA.
18. "Remedial Action" shall mean activities required by EPA and/or the Agencies to control or eliminate releases of MTBE and/or other gasoline constituent contamination from the Site.
19. "Scope of Work" shall mean the document provided as Attachment A to this Order and incorporated herein by this reference. The Scope of Work will also be referred to as the "SOW."
20. "SCWC" shall mean the Southern California Water Company, an Impacted Party.
21. "Shell" shall mean the parties to the Shell Order, EPA Docket No. RCRA-7003-09-99-0007 and to the AOC, EPA Docket No. RCRA 7003-09-2000-0003.
22. "Source Sites" or "Source Site Facilities" shall mean the underground gasoline storage tank systems within the Charnock Sub-Basin Investigation Area at the facilities identified in Attachment B, and PRP Site No. 11 as shown on Figure 1.
23. "Tertiary-Butyl Alcohol" or "TBA" shall mean the chemical whose CAS registry number is 75-65-0.
24. "USTs" shall mean underground storage tank systems, including the underground storage tanks and associated piping and equipment located or formerly located at Respondents' PRP Sites No. 1, 4, 5, 6, 7, 8, 10, 11, 12, 16, 23, and 30.
25. "Work" shall mean those requirements set forth in Section VI of this Order (Work to be Performed) and the attached Scope of Work (SOW).

VI. WORK TO BE PERFORMED AND PARTICIPATION AND COORDINATION

1. Respondents are ordered to perform all activities required by the SOW, provided as Attachment A, and by this Order. Respondents shall make submittals and certifications as set forth below and within the time schedules specified in the SOW. All days specified below and in the SOW are consecutive calendar days from the Effective Date of this Order, unless otherwise specified. Due dates falling on a Saturday, Sunday, or federal holiday will be automatically extended to the next business day.
2. No provision of this Order shall relieve Shell of its obligation to perform each and every requirement of the UAO dated September 22, 1999 and the AOC dated July 26, 2000, except to the extent of any actual performance by the Respondents to this Order.
3. Commencing on January 1, 2000, Respondents shall submit quarterly progress reports ("Progress Reports") describing all actions taken by Respondents to comply with this Order during the preceding quarter and all actions planned to comply with this Order during the upcoming quarter.
4. To the extent not inconsistent with this Order, or with EPA's instructions, Respondents shall at all times participate in the work to be performed under this Order and coordinate with EPA, its contractors, the Regional Board, Shell and Shell's contractors, and other parties (if any) working under EPA's direction at the Charnock Sub-Basin. Respondents shall perform all activities required by this Order in such a manner so as not to impede the performance by other parties responsible for any ongoing or future activities.
5. As described in Section XIV, (Project Coordinators), Respondents shall jointly designate a Project Coordinator as the focal point for communications with EPA and other parties working at the Site. Respondents' Project Coordinator shall be responsible for overseeing Respondents' implementation of this Order and shall have the responsibility for assuring Respondents' integration and coordination of their activities.
6. Respondents to this Order are ordered to participate and cooperate with the Respondents to the Shell AOC. Within five (5) days from the Effective Date of this Order, the Respondents shall establish communication and coordination

procedures to facilitate the performance of the Work required by this Order with Shell, the Impacted Parties and the Agencies. Respondents shall implement these procedures immediately; however, the Agencies reserve the right to require different or modified procedures to be implemented. Within five (5) days from the Effective Date of this Order, all such procedures shall be prepared and submitted by Respondents to the Agencies for approval in accordance with Section VIII, (Approvals/Disapprovals) as Respondents' Communication and Coordination Plan (RCCP). The RCCP will specify the requirements and procedures by which Respondents will communicate with one another and with Shell, the Impacted Parties and with the Agencies, in performing the Work. The RCCP shall include at a minimum the following:

a. Communication Strategy: The RCCP shall specify how the Respondents' Project Coordinator will communicate and disseminate information relative to this Order with one another and with Shell.

b. Coordination of Efforts: The RCCP shall describe with specificity how the technical, financial, and administrative requirements of this Order are to be coordinated with Shell and distributed among and performed by Respondents.

7. To the extent that, pursuant to the AOC, Shell is performing or has stated an intent to perform any or all of the Work required under this Order, Respondents shall make best efforts to coordinate with Shell. Best efforts to coordinate shall include at a minimum:

a. Communication in writing to Shell, with copies to the Agencies and Impacted Parties, within five (5) days of the Effective Date of this Order, as to Respondents' desire to comply with this Order and to participate in the performance of the Work, or in lieu of performance, to pay for the performance of the Work;

b. Submission to Shell, with copies to the Agencies and Impacted Parties, within five (5) days of the effective date of this Order, of a good-faith offer to perform the Work, in whole or in part, or in lieu of performance to pay for the Work, in whole or in part; and

c. Engaging in good-faith negotiations with Shell to perform, or in lieu of performance, to pay for the Work required by this Order, if Shell refuses the Respondents' initial offer.

8. To the extent that, pursuant to the AOC, Shell is performing or has stated an intent to perform any or all of the Work required under this Order, Respondents shall make best efforts to participate in the performance of the Work with the Shell. Best efforts to participate shall include, in addition to the requirements set out elsewhere in this Order, at a minimum:

a. performance of the Work as agreed by any Respondent and Shell to be undertaken by any Respondent; and

b. payment of all amounts as agreed by any Respondent and Shell to be paid by a Respondent, if, in lieu of performance, a Respondent has offered to pay for the Work required by this Order, in whole or in part.

9. Each Respondent shall notify EPA in writing within five (5) days of the rejection, if any, by Shell of Respondent's offer to perform or, in lieu of performance, to pay for the Work.

10. The undertaking or completion of any requirement of this Order by any other person, with or without the participation of a Respondent, shall not relieve any Respondent of its obligation to perform each and every other requirement of this Order.

11. Any failure to perform, in whole or in part, any requirements of this Order by any other person with whom a Respondent is coordinating or participating in the performance of such requirements shall not relieve any Respondent of its obligation to perform each and every requirement of this Order.

12. Upon request of EPA and subject to any claims of applicable privilege(s), each Respondent shall submit to EPA all documents in its possession, custody, or control relating to (1) any offer to perform or pay for, or (2) the performance of or payment for the Work required by this Order by any Respondent or non-Respondent to this Order.

13. EPA may seek civil penalties from each Respondent for each failure to comply with any of the requirements of this Order.

VII. NOTICES AND SUBMISSIONS

1. Whenever, under the terms of this Order, written notice is required to be given, or any document is required to be sent by one Party to another, it shall be provided as directed in this section. When Respondents are required to provide notice or submittals to EPA, they shall also provide a copy of the notice or submittal, in the same quantity and in the same manner as required for EPA, to the Regional Board's representatives, the Impacted Parties' representatives as listed below, and to Shell's representatives as listed below, except when different quantities or manner of notice are provided elsewhere in this Order or the SOW. Notice shall be provided to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other parties in writing. All notices and submissions shall be sent by either certified mail, return receipt requested, overnight mail or facsimile, and notice shall be effective upon receipt, unless otherwise provided herein.
2. With respect to any and all submissions to the Agencies required by this Order, including those required pursuant to the SOW, Respondents shall provide two hard copies and one electronic copy of each document to each of the following Project Coordinators at the addresses specified below (except that a total of 3 hard copies shall be provided to EPA), unless those Project Coordinators or their successors give notice of a change to the Respondents in writing.

Project Coordinators for Agencies and Impacted Parties

As to EPA:

(1 Copy)

Steven Linder, Project Coordinator
Office of Underground Storage Tanks (WST-8)
Waste Management Division
U.S. Environmental Protection Agency - Region IX
75 Hawthorne Street
San Francisco, CA 94105-3901
Telephone: (415) 744-2036
Facsimile: (415) 744-1044(Steven Linder)

E-Mail: linder.steven@epa.gov

(1 Copy)

Greg Lovato, Alternate Project Coordinator
EPA c/o LA RWQCB
320 W. 4th Street, Suite 200
Los Angeles, CA 90013
Telephone: (213) 576-6713
Facsimile: (213) 576-6700
E:mail: lovato.greg@epa.gov

As to EPA Continued:

(1 Copy)

Walter Crone
Ninyo & Moore
9272 Jeronimo Road, Suite 123 A
Irvine, CA 92618-1914
E-Mail: wcrone@ninyoandmoore.com

As to the Regional Board:

David Bacharowski
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013
Telephone: (213) 576-6620
Facsimile: (213) 576-6700
E-Mail: DBACHARO@rb4.swrcb.ca.gov

As to the City of Santa Monica:

Gil Borboa
City of Santa Monica
1212 Fifth St. 3rd Floor
Santa Monica, CA 90401
Telephone: (310) 458-8230
Facsimile: (310) 393-6697
E-mail: gil-borboa@ci.santa-monica.ca.us

As to the Southern California Water Company:

Denise Kruger
Southern California Water Company
630 E. Foothill Blvd.
San Dimas, CA 91773
Telephone: (909) 394-3600
Facsimile: (909) 394-0827
E-mail: dlkruger@scwater.com

As to the Shell Respondents (Shell, Shell Products and Equilon):

Chuck Paine
Shell Oil Company
4482 Barranca Parkway
Suite 180-171
Irvine, CA 92604
Telephone: (949) 654-1275
Fax: (949) 654-1303
E-mail: cbpaineiii@shellus.com

Additional contact as to Equilon:

H. Brad Boschetto
Equiva Services, LLC
Carson Plant
20945 S. Wilmington Ave.
Carson, CA 90810-1039
Phone: (310) 816-2074
Fax: (310) 816-2356
E-mail: hbboschetto@equiva.com

Whenever, under the terms of this Order, EPA provides notice to the Respondents, EPA will direct this notice to the following persons and addresses, unless the Respondents provide notice of a different person and/or address:

Mike Bauer
Chevron Products Company
145 S. State College Blvd.
Brea, CA 92822-2292
Telephone: (714) 671-3207
Facsimile: (714) 671-3440
E-Mail: msba@chevron.com

Respondents may jointly designate a successor representative.

3. With respect to all submissions and notices, including but not limited to notice of a change of Project Coordinator, notice of a delay in performance, notice of an endangerment, or notice of a failure to obtain access to property not owned or leased by Respondents, but excluding proposed workplans and technical reports prepared pursuant to the SOW, Respondents shall also provide written notice to the individuals at the addresses specified below (in addition to the individuals listed in subparagraph 2 above) unless the individuals listed below or their successors give written notice of a change to Respondents.

As to EPA:

Laurie Williams, Esq.
Office of Regional Counsel (ORC-3)
U.S. Environmental Protection Agency
75 Hawthorne Street
San Francisco, CA 94105
Telephone: (415) 744-1387
Facsimile: (415) 744-1041
E-Mail: williams.laurie@epa.gov

Brad O'Brien, Esq.
Environmental Enforcement Division
U.S. Department of Justice
301 Howard Street
San Francisco, CA 94105
Telephone: (415) 744-6484
Facsimile: (415) 744-6476
E-Mail: brad.o'brien@usdoj.gov

As to the Regional Board:

Jorge Leon, Esq.
State Water Resources Control Board
901 P Street
Sacramento, CA 95814
Telephone: (916) 657-2428
Facsimile: (916) 653-0428
E-Mail: JLEON@exec.swrcb.ca.gov

Marilyn Levin, Esq.
Department of Justice
Office of the Attorney General
300 S. Spring Street, Suite 500
Los Angeles, CA 90013
Telephone: (213) 897-2612
Facsimile: (213) 897-2616
E-Mail: levinm@hdcdojnet.state.ca.us

As to the City of Santa Monica:

Joseph Lawrence, Esq.
Office of City Attorney
City of Santa Monica
1685 Main Street
Santa Monica, CA 90401
Telephone: (310) 458-8375
Facsimile: (310) 395-6727
E-Mail: Joe-Lawrence@CI.SANTA-MONICA.ca.us

Barry Groveman, Esq.
Musick, Peeler & Garrett
One Wilshire Boulevard
Los Angeles, California 90017-3321
Telephone: 213-629-7615
Fax: 213-624-1376
E-Mail: b.groveman@mpglaw.com

As to the Southern California Water Company:

Robert Saperstein, Esq.
Hatch & Parent
21 East Carrillo Street
Santa Barbara, CA 93101-2782
Telephone: (805)963-7000
Facsimile: (805)865-4333

E-Mail: rob_saperstein@msn.com

As to the Shell Respondents:

Cynthia Burch
Munger, Tolles & Olsen
355 South Grand Avenue, 35th Floor
Los Angeles, CA 90071-1560
Telephone: (213) 683-9584
Facsimile: (213) 683-4084
E-Mail: burchcl@mto.com

4. EPA has been informed that some of the Respondents have designated Mike Bauer to act as Project Coordinator for Respondents and EPA will provide all correspondence and notices under this Order to Mike Bauer at the address listed above, unless Respondents provide a change of Project Coordinator and/or a new address and other contact information.
5. EPA has been informed that some of the Respondents have jointly designated the following attorney contact:

Jerry Ross
Pillsbury, Madison & Sutro
50 Fremont Street
San Francisco, CA 94105
Mailing Address:
P.O. Box 7880
San Francisco, CA 94120-7880
Telephone: (415) 983-1988
Facsimile: (415) 983-1200
E-Mail: ross_jw@pillsburylaw.com

EPA will provide all correspondence and notices under this Order to Mr. Ross at the address listed above, unless Respondents provide notice of a change of attorney contact, including new address and other contact information.

VIII. APPROVALS/DISAPPROVALS

1. After review of any deliverable, workplan, report, or other item which is required to be submitted for review and approval pursuant to this Order, EPA may: (a) approve the

submission; (b) approve the submission with modifications; (c) disapprove the submission and direct Respondents to re-submit the document after incorporating EPA's comments; or (d) disapprove the submission and assume responsibility for performing all or any part of the response action. As used in this Order, the terms "approval by EPA," "EPA approval" or a similar term mean the actions described in clauses (a) or (b) of this paragraph. EPA may choose to provide its approval, modification or disapproval jointly with the Regional Board in a letter from the Agencies.

2. In the event of approval or approval with modifications by EPA, Respondents shall proceed to take all actions required by the plan, report, or other item, as approved or modified by EPA.
3. Upon receipt of a notice of disapproval or a request for a modification, Respondents shall, within twenty-one (21) days or such longer or shorter time as specified by EPA in its notice of disapproval or request for modification, correct the deficiencies and resubmit the plan, report, or other item for approval. Notwithstanding the notice of disapproval or approval with modifications, Respondents shall proceed, at the direction of EPA, to take any action required by any non-deficient portion of the submission.
4. In the event that a re-submitted plan, report or other item, or portion thereof is disapproved by EPA, EPA may again require Respondents to correct the deficiencies in accordance with the preceding paragraphs. EPA also retains the right to develop the plan, report or other item. Respondents shall implement any such plan, report or item as amended or developed by EPA.
5. If any submission is not approved by EPA after re-submission in accordance with the immediately preceding paragraph, Respondents shall be deemed in violation of the provision of this Order requiring Respondents to submit such plan, report or item.
6. Any deliverables, plans, reports or other item required by this Order to be submitted for EPA review and approval are, upon approval of EPA, incorporated into this Order and enforceable hereunder.

IX. ADDITIONAL RESPONSE ACTIVITIES

1. In the event EPA determines that additional response activities are necessary, in light of all relevant circumstances, EPA may notify Respondents that additional response activities are necessary.
2. Unless otherwise stated by EPA, within thirty (30) days of receipt of notice from EPA that additional response activities are necessary, Respondents shall submit for EPA approval a workplan for the additional response activities. The workplan shall conform to all applicable requirements of this Order. Upon EPA's approval of the workplan pursuant to Section VIII (Approvals/Disapprovals) of this Order, Respondents shall implement the workplan for additional response activities in accordance with the provisions and schedule contained therein.

X. ACCESS TO PROPERTY OWNED OR LEASED BY RESPONDENTS AND DATA/DOCUMENT AVAILABILITY

1. If any of the property at which the Work required pursuant to this Order is to be performed is owned or leased by Respondents, then Respondents shall provide access to EPA and the Regional Board and their authorized representatives, as well as to the Impacted Parties and their authorized representative, to observe and oversee the Work.

XI. ACCESS TO PROPERTY NOT OWNED OR LEASED BY RESPONDENTS

1. To the extent that any of the property at which the Work required pursuant to this Order is to be performed is not owned or controlled by Respondents, then Respondents will obtain, or use their best efforts to obtain, site access agreements from the present owner(s) and/or lessees, as the case may be, within sixty (60) days of the Effective Date of this Order if the need for site access is known as of the Effective Date of the Order, or, if not known as of the Effective Date of this Order, within sixty (60) days of EPA approval of any work plan, report or document pursuant to this Order which requires Work on such property. "Best efforts" as used in this paragraph shall include, at a

minimum, but shall not be limited to: (a) a certified letter from Respondents to the present owner(s) and/or lessee(s) of the property requesting access agreements to permit Respondents, EPA, the Regional Board and the Impacted Parties and their authorized representatives access to such property, and (b) the payment of reasonable compensation in consideration for such access, if the owner and/or lessee of such property has not been designated as a Potentially Responsible Party (PRP) for the Charnock MTBE and other gasoline constituent contamination by the Agencies or is no longer designated as a PRP. "Reasonable sums of money" means the fair market value of the right of access necessary to implement the requirements of this Order.

2. All site access agreements entered into pursuant to this Order shall provide access for EPA, its contractors and oversight officials, the State and its contractors, and the Impacted Parties and their contractors, as well as Respondents and Shell and Respondents' and Shell's authorized representatives. Such agreements shall specify that Respondents, Shell and their contractors are not EPA's representatives or agents.
3. If access agreements are not obtained within the time set forth above, Respondents shall immediately notify EPA, in writing, of the failure to obtain access, specifying the efforts undertaken to obtain access. Subject to the United States' non-reviewable discretion, EPA may elect to use its legal authorities to obtain access for the Respondents, may perform those response actions with EPA staff and/or contractors at the property in question, or may terminate the Order if Respondents cannot obtain access agreements. If EPA performs those tasks or activities with staff and/or contractors and does not terminate the Order, Respondents shall perform all other activities not requiring access to that property, and shall reimburse EPA to the full extent allowed by law for all response costs incurred in performing such activities. Respondents shall integrate the results of any such tasks undertaken by EPA into their reports and deliverables.
4. Respondents shall allow EPA and its authorized representatives, the Regional Board and its representatives, and the Impacted Parties and their representatives to enter and freely move about any property needed for the Work at

all reasonable times for the purpose of inspecting conditions, activities, the results of activities, records, operating logs, and contracts related to the Work; reviewing the progress of Respondents in carrying out the terms of this Order; conducting tests as EPA or its authorized representatives deem necessary; using a camera, sound recording device or other documentary type equipment; verifying the data submitted to EPA by Respondents; and copying all records, files, photographs, documents, sampling and monitoring data, and other writings related to work undertaken in carrying out this Order. Notwithstanding any provision of this Order, the United States and EPA retain all of their information gathering, inspection and access authorities and rights, including enforcement authorities related thereto.

5. No provision of this Order shall be interpreted as limiting or affecting Respondents' right to assert a business confidentiality claim, pursuant to 40 C.F.R. Part 2, Subpart B, covering all or part of the information submitted to EPA pursuant to the terms of this Order. If no such confidentiality claim accompanies the information when it is submitted to EPA, it may be made available to the public by EPA without further notice to the Respondents. Respondents shall not assert any business confidentiality claim with regard to site conditions or any physical, sampling, monitoring or analytic data. Respondents shall maintain for the period during which the Order is in effect an index of any documents that Respondents claim contain confidential business information. The index shall contain, for each document, the date, author, addresses, and subject of the document as well as the pages on which any information claimed to be confidential business information appears. Upon written request from EPA, Respondents shall submit a copy of the index to EPA.

XII. ENDANGERMENT AND EMERGENCY RESPONSE

1. In the event Respondents, or any of them, identify a current or immediate threat to human health and the environment, Respondent or Respondents, as the case may be, shall immediately notify the EPA Project Coordinator (or his alternate if not available) by telephone. If neither of these persons are available, Respondent or Respondents shall

immediately notify the Chief, Office of Underground Storage Tanks at (415) 744-2079, and the EPA Region IX Emergency Response Section at (415) 744-2000. Simultaneous notification shall be made to the Regional Board's Project Manager by telephone. In addition to the required telephonic notice, written notification shall be made to EPA within twenty-four (24) hours of first obtaining knowledge of the threat, summarizing the immediacy and magnitude of the current or immediate threat to human health and the environment.

2. Respondents shall take immediate action to prevent, abate, or minimize the threat in consultation with EPA's Project Coordinator and in accordance with all applicable provisions of this Order, including but not limited to the Health and Safety Plan. Respondent shall thereafter submit for EPA approval, as soon as possible but no later than five (5) days after identification of the threat, a plan to mitigate the threat. EPA will approve or modify the plan, and Respondents shall implement the plan as approved or modified by EPA. In the event that any Respondent or Respondents fail to take appropriate response action as required by this Section, and EPA takes that action instead, Respondent or Respondents, as applicable, shall reimburse EPA for all costs of the response action to the full extent allowed by law.
3. If EPA determines that any action or occurrence during the performance of the Work causes or threatens to cause a release or disposal of hazardous substances, pollutants or contaminants, regulated substances or hazardous or solid wastes which may present an imminent and substantial endangerment to the public health or welfare or the environment, EPA may direct Respondents to undertake any action EPA determines is necessary to abate such disposal or release or threatened release and/or direct Respondents to cease activities Respondents are then undertaking pursuant to this Order for such time as may be needed to abate any such disposal or release or threatened release.
4. Nothing in this Section shall be deemed to limit any authority of the United States to take, direct or order all appropriate action to protect human health and the environment or to prevent, abate or minimize an actual or threatened release of hazardous substances, pollutants or

contaminants, regulated substances or hazardous or solid wastes.

XIII. RECORD PRESERVATION

1. Respondents shall provide to EPA upon request copies of all documents and information within their possession and/or control or that of their contractors, employees or agents relating to activities required in connection with the Work or to the implementation of this Order, including but not limited to sampling, analysis, chain of custody records, manifests, trucking logs, receipts, reports, sample traffic routing, correspondence, or other documents or information related to the Work. Upon request by EPA, Respondents shall also make available to EPA for purposes of investigation, information gathering, or testimony, their employees, agents, or representatives with knowledge of relevant facts concerning the performance of the Work.
2. Until ten (10) years after termination of this Order, each Respondent shall preserve and retain all records and documents in Respondent's possession or control, including the documents in the possession or control of Respondent's contractors, employees or agents on and after the Effective Date of this Order that relate in any manner to the Work, including but not limited to records, documents or other information relating to its potential liability with regard to the Work. At the conclusion of this document retention period, each Respondent shall notify EPA at least ninety (90) calendar days prior to the destruction of any such records or documents, and upon request by EPA, shall deliver any such records or documents to EPA.
3. Until ten (10) years after termination of this Order, each Respondent shall preserve, and shall instruct its contractors and agents to preserve, all documents, records, and information of whatever kind, nature or description relating to the performance of the Work. Upon the conclusion of this document retention period, each Respondent shall notify the EPA at least ninety (90) days prior to the destruction of any such records, documents or information, and, upon request of the EPA, shall deliver all such documents, records and information to EPA.

XIV. PROJECT COORDINATORS

1. Within ten (10) days after the Effective Date of this Order, Respondents shall jointly designate a Project Coordinator for compliance with this Order and shall submit the Project Coordinator's name, address, telephone number, facsimile number and e-mail address to EPA for review and approval. Respondents' Project Coordinator shall be responsible for overseeing Respondents' implementation of this Order. If Respondents wish to change their Project Coordinator, Respondents shall provide written notice to EPA, five (5) days prior to changing the Project Coordinator, of the name and qualifications of the new Project Coordinator.
2. EPA hereby designates Steven Linder as the EPA Project Coordinator, and Greg Lovato as the EPA Alternate Project Coordinator. EPA has the unreviewable right to change its Project Coordinator and/or its Alternate Project Coordinator. If EPA changes its Project Coordinator or Alternate Project Coordinator, EPA will inform Respondents in writing of the name, address, and telephone number of the new Project Coordinator or Alternate Project Coordinator.
3. The Project Coordinators will be responsible for overseeing the implementation of the Work. The EPA Project Coordinator will be EPA's primary designated representative with respect to the Work for this purpose. To the maximum extent possible, all communications, whether written or oral, between Respondents and EPA concerning the Work to be performed pursuant to this Order shall be directed through the Project Coordinators.

XV. QUALITY ASSURANCE, SAMPLING, DATA ANALYSIS AND PRIOR NOTICE OF FIELD ACTIVITIES

1. Respondents shall comply with the EPA quality assurance and quality control requirements, except to the extent that they are modified by specific requirements pursuant to this Order. To provide quality assurance and maintain quality control, Respondents shall:
 - a. Ensure that the laboratory used by Respondents for analyses performs according to a method or methods deemed satisfactory to EPA and submits all protocols to

be used for analyses to EPA as part of the sampling and analysis plan described in subparagraph c., below. If methods other than those in SW-846 are proposed for use, Respondents shall submit all proposed protocols accompanied by an appropriate justification and a demonstration of the effectiveness and applicability of the proposed alternative to EPA for EPA's written approval at least thirty (30) days prior to the commencement of analysis and shall obtain EPA's written approval prior to the use of such protocols.

- b. Ensure that EPA personnel and EPA's authorized representatives are allowed access to the laboratory and personnel utilized by Respondents for analyses.
 - c. Prepare and submit a sampling and analysis plan for collection of data, based on the guidance listed above, no less than thirty (30) days prior to commencing field sampling activities, or, in the case of field activities to be performed in connection with any work plan, at the time of the submission of such work plan to EPA for review and approval.
2. Notify EPA, the Regional Board and the Impacted Parties in writing at least 5 days before engaging in any field activities pursuant to this Order. At the request of EPA, Respondents shall provide or allow EPA, the Regional Board, the Impacted Parties or their authorized representatives to draw split or duplicate samples of all samples collected by Respondents with regard to this Work or pursuant to this Order. Nothing in this Order shall limit or otherwise affect EPA's authority to draw samples pursuant to applicable law.
 3. Respondents shall submit to EPA, the Regional Board and the Impacted Parties the results of all sampling and/or tests and other data generated by, or on behalf of, Respondents, in accordance with the requirements of this Order, the SOW and any workplans approved under this Order.

XVI. DELAY IN PERFORMANCE

1. Any delay in performance of this Order that, in EPA's judgment, is not properly justified by Respondents under the

terms of this paragraph shall be considered a violation of this Order. Any delay in performance of this Order shall not affect Respondents' obligations to fully perform all obligations under the terms and conditions of this Order.

2. Respondents shall notify EPA of any delay or anticipated delay in performing any requirement of this Order. Such notification shall be made by telephone to EPA's Project Coordinator or Alternate Project Coordinator within forty-eight (48) hours after any Respondent or Respondents first knew or should have known that a delay might occur. Respondent or Respondents shall adopt all reasonable measures to avoid or minimize any such delay. Within five (5) business days after notifying EPA by telephone, EPA shall be provided with written notification fully describing the nature of the delay, any justification for the delay, any reason why Respondent(s) should not be held strictly accountable for failing to comply with any relevant requirements of this Order, the measures planned and taken to minimize the delay, and a schedule for implementing the measures that will be taken to mitigate the effects of the delay. Increased costs or expenses associated with implementation of the activities called for in this Order are not a justification for any delay in performance.

XVII. RESERVATION OF RIGHTS, NON-WAIVER, COMPLIANCE WITH LAWS AND ENFORCEMENT

1. EPA hereby reserves all of its statutory and regulatory powers, authorities, rights, remedies and defenses, both legal and equitable, including the right to disapprove Work performed by Respondents pursuant to this Order, to perform any portion of the Work required herein and to require that Respondents perform tasks in addition to those required by this Order. This reservation of rights also includes the right to require additional investigation, characterization, feasibility studies and/or response or corrective actions pursuant to RCRA, the Safe Drinking Water Act (SDWA) or other applicable legal authorities. EPA reserves its right to seek reimbursement from Respondents for costs incurred by the United States to the full extent allowed by law. This Order shall not be construed as a covenant not to sue, release, waiver or limitation of any rights, remedies, powers or authorities, civil or criminal, which EPA has

under RCRA, SDWA, or any other statutory, regulatory or common law enforcement authority of the United States.

2. EPA further reserves all of its statutory and regulatory powers, authorities, rights and remedies, both legal and equitable, which may pertain to Respondents' failure to comply with any of the requirements of this Order, including without limitation, the assessment of penalties under Sections 7003 and 9006 of RCRA, 42 U.S.C. Sections 6973 and 6991e. Nothing in this Order shall limit or preclude EPA from taking any additional enforcement actions, including modification of this Order or issuance of additional Orders, or from requiring Respondents in the future to perform additional activities pursuant to Subtitle I of RCRA, 42 U.S.C. Section 6991 et seq., and the regulations promulgated thereunder, or any other applicable law or regulation and/or from taking additional actions as EPA may deem necessary at the Respondents' Source Sites, the Charnock Wellfields, or at any other facility. EPA reserves its right to seek reimbursement from Respondents for such costs incurred by the United States to the full extent allowed by law, including, but not limited to a cost recovery action under RCRA, including Section 9003(h) of RCRA, 42 U.S.C. Section 6991b(h) of RCRA.
3. All activities undertaken by Respondents pursuant to this Order shall be performed in accordance with the requirements of all applicable federal, state and local laws and regulations. Compliance by Respondents with the terms of this Order shall not relieve Respondents of their obligations to comply with RCRA or any other applicable federal or state laws and regulations.
4. This Order is not, and shall not be construed as a permit issued pursuant to any federal or state statute or regulation. This Order does not relieve Respondents of any obligation to obtain and comply with any federal, state or local permit. Where any portion of the Work requires a federal, state or local permit or approval, Respondents shall submit timely applications and take all other actions necessary to obtain and to comply with all such permits or approvals.
5. Notwithstanding any provision of this Order, the United States hereby retains all of its information gathering,

inspection and enforcement authorities and rights under Sections 3007, 7003 and 9005 of RCRA, 42 U.S.C. Section 6927, 6973 and 6991d, Section 1431 of SDWA, 42 U.S.C. Section 300i, and any other applicable statutes or regulations.

6. Nothing in this Order shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, entity or corporation for any liability such person, firm, partnership, entity or corporation may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous constituents, hazardous substances, hazardous wastes, regulated substances, pollutants, contaminants or solid wastes generated, transported or handled in connection with the Work.
7. If a court issues an order that invalidates or stays any provision of this Order or finds that Respondents have sufficient cause not to comply with one or more provisions of this Order, Respondents shall remain bound to comply with all provisions of this Order not invalidated by the court's order.

XVIII. LIABILITY INSURANCE

1. At least seven (7) days prior to commencing any Work required pursuant to this Order (other than making Water Replacement Payments or performing reporting, communication or coordination activities), each Respondent shall submit to EPA a certification that Respondent or its contractors and subcontractors have adequate insurance coverage or have indemnification for liabilities for injuries or damages to persons or property which may result from the activities to be conducted by or on behalf of Respondent pursuant to this Order. Comprehensive general liability insurance coverage or indemnification shall be at least in the amount of two million dollars (\$2,000,000) in annual aggregate coverage. Each Respondent shall ensure that such insurance or indemnification is maintained for the duration of the Work required by this Order.

XIX. OPPORTUNITY TO CONFER

1. Respondent(s) may, within ten (10) days after the date this Order is signed, request a conference with EPA to discuss this Order. If requested, the conference shall occur at a time and location to be selected by the Agencies in consultation with Respondents.
2. The purpose and scope of the conference shall be limited to issues involving the implementation of the Work and any other response actions required by this Order and the extent to which Respondents intend to comply with this Order. This conference is not an evidentiary hearing, and does not constitute a proceeding to challenge this Order. It does not give Respondents a right to seek review of this Order, or to seek resolution of potential liability, and no official stenographic record of the conference will be made. At any conference held pursuant to Respondents' request, each Respondent may appear in person or by an attorney or other representative.
3. Requests for a conference must be made by telephone ((415) 744-1387) followed by written confirmation mailed that day to Laurie Williams, Assistant Regional Counsel (ORC-3), at United States Environmental Protection Agency, 75 Hawthorne Street, San Francisco, CA 94105, or by facsimile to (415) 744-1041.

XX. NOTICE OF INTENTION TO COMPLY

1. Each Respondent shall provide, not later than the Effective Date of this Order, written notice to Laurie Williams, Assistant Regional Counsel, at the address set forth above, stating whether it will comply with the terms of this Order. If each Respondent does not unequivocally commit to perform the Work required by this Order, then that Respondent shall be deemed to have violated this Order and to have failed or refused to comply with this Order. The absence of a response by EPA to the notice required by this paragraph shall not be deemed to be acceptance of any assertions that Respondents may make in their respective notices.

XXI. PENALTIES FOR NON-COMPLIANCE

1. Section 7003(b) of RCRA, 42 U.S.C. Section 6973(b), provides that "[a]ny person who willfully violates, or fails or refuses to comply with, any Order of the Administrator under [RCRA Section 7003(a)] may, in an action brought in the appropriate United States district court to enforce such order, be fined not more than \$5,000 for each day in which such violation occurs or such failure to comply continues." This amount is subject to the increase provided for in Public Law 101-410, enacted October 5, 1990; 104 Stat. 890, as amended by the Debt Collection Improvement Act of 1996 (31 U.S.C. 3701). See 61 Fed. Reg. 69359 (December 31, 1996)(Civil Monetary Penalty Inflation Adjustment Rule; Final Rule); 40 C.F.R. Part 19.

XXII. NO FINAL AGENCY ACTION

1. Notwithstanding any other provision of this Order, no action or decision by EPA pursuant to this Order, including without limitation, decisions of the Regional Administrator, the Director of the Waste Management Division or her successor, or any authorized representative of EPA, shall constitute final agency action giving rise to any rights of judicial review prior to EPA's initiation of a judicial action for violation of this Order, which may include an action for penalties and/or an action to compel Respondents' compliance with the terms and conditions of this Order. In any action brought by EPA to enforce this Order, Respondents shall bear the burden of proving that EPA's action was arbitrary and capricious or not in accordance with law.

XXIII. EFFECTIVE DATE AND COMPUTATION OF TIME

1. This Order shall be effective without further notice thirty (30) days after the Order is signed by the Director of the Waste Management Division ("Effective Date"). All times for performance of ordered activities shall be calculated from this Effective Date, unless otherwise specified.

XXIV. MODIFICATION AND INTERPRETATION

1. This Order may be amended or modified by EPA. Such amendment shall be in writing and shall have as its effective date that date which is ten (10) days after the date the amendment or modification is signed by the Director of the Waste Management Division, unless otherwise specified therein.
2. The EPA Project Coordinator may agree to changes in the scheduling of Work. Any such changes must be requested in writing by Respondents and be approved in writing by the EPA Project Coordinator.
3. No informal advice, guidance, suggestions or comments by EPA regarding reports, plans, specifications, schedules and any other writing submitted by Respondents will be construed as an amendment or modification of this Order.
4. The headings in this Order are for convenience of reference only and shall not affect interpretation of this Order.

IT IS SO ORDERED.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY, REGION IX

By: Original Signed By
JEFF SCOTT
Acting Director
Waste Management Division
EPA REGION IX

DATED: November 30, 2000

CERTIFICATE OF SERVICE

I, Steven Linder, hereby certify that I have served the foregoing Unilateral Administrative Order for Participation and Cooperation in Initial Regional Response, EPA Docket No. RCRA-7003-09-2001-0001, by mailing copies thereof via U.S. Mail (Certified/Return Receipt Requested) from San Francisco, California, to the following persons this 30th day of November, 2000:

Lee R. Raymond, President
Exxon Mobil Corporation
P.O. Box 392 #323
Houston, TX 77001-0392

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. *(On Original Documents)*

M R. Bowlin, President
Atlantic Richfield Company
333 S. Hope St. Suite 1235
Los Angeles, CA 90071

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. *(On Original Documents)*

P.A. Woertz, President
Chevron U.S.A., Inc.
P. O. Box 7053
San Francisco, CA 94120-7053

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. *(On Original Documents)*

A.W. Dunham, President
Conoco, Inc.
600 N. Dairy Ashford
Houston, TX 77079

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. *(On Original Documents)*

W. R. Gover, President
Kayo Oil Company
Douglas Oil Company of California
600 N. Dairy Ashford
Houston, TX 77079

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. *(On Original Documents)*

Roger C. Beach, President
Unocal Corporation
Union Oil Company of California
2141 Rosecrans Ave., #4000
El Segundo, CA 90245

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. *(On Original Documents)*

L. A. Noto, President
Mobil Oil Corporation
3225 Gallows Rd.
Fairfax, VA 23037

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. *(On Original Documents)*

Certificate of Service for Unilateral Administrative Order for Participation and
Cooperation in Initial Regional Response, Docket No. RCRA-7003-09-2001-0001
Page 2

Thomas D. O'Malley, President
Tosco Corporation
Avon Refinery Legal Dept.
150 Solano Way
Martinez, CA 94553-1487

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. (*On Original Documents*)

Ted Orden, President
Thrifty Oil Company
Best California Gas, Ltd.
13539 E. Foster Rd.
Santa Fe Springs, CA 90670

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. (*On Original Documents*)

Bryce Rhodes, President
H L W Corporation
11166 Venice Blvd.
Culver City, CA 90232

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. (*On Original Documents*)

Kazuho Nishida
c/o Sheila Welch
6510 Alondra Blvd.
Paramount, CA 90723

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. (*On Original Documents*)

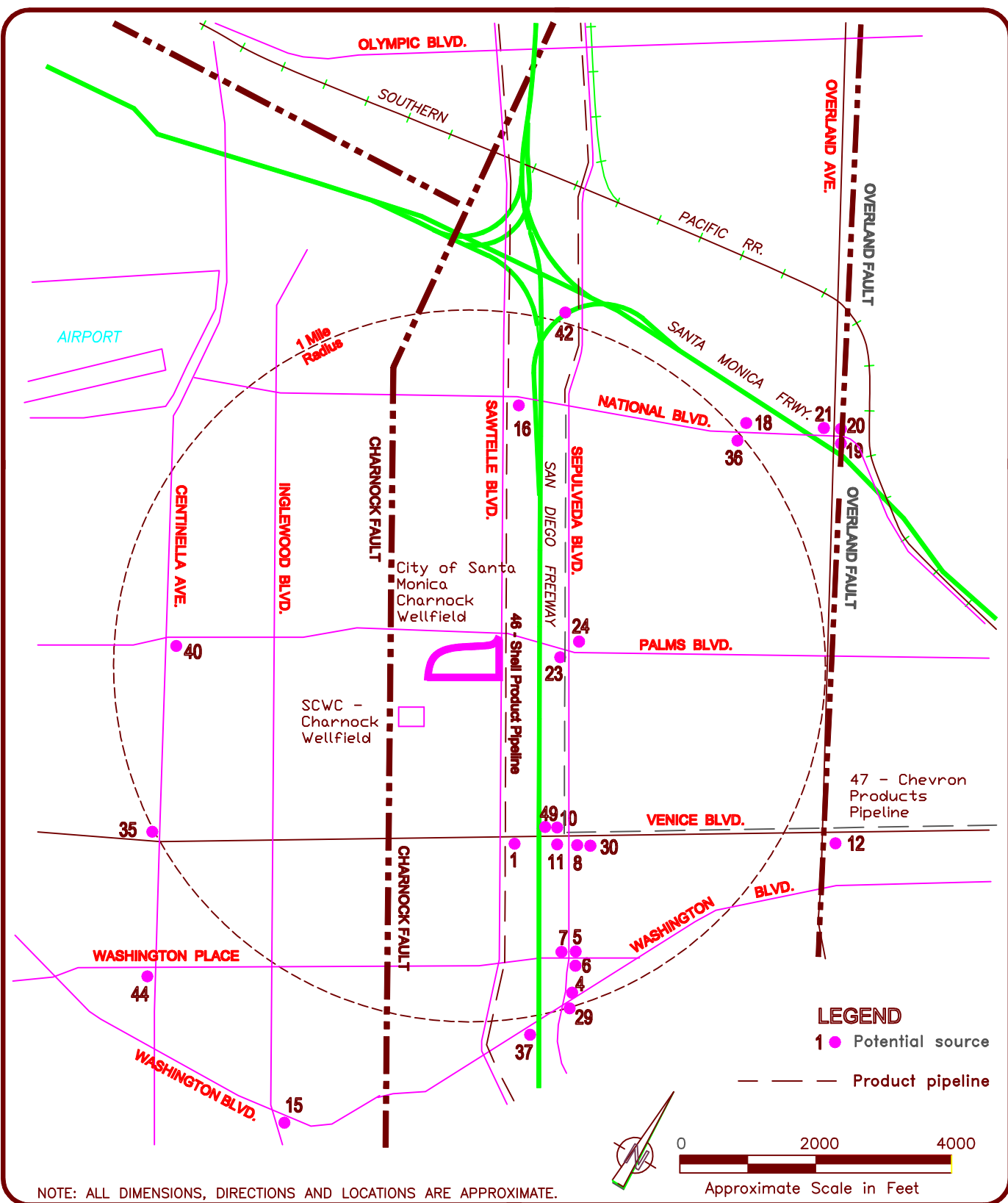
Mr. Allen Gimenez, Vice President
Winall Oil Company
1338 E. 29th Street
Signal Hill, CA 90806-1842

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
CLAIM NO. (*On Original Documents*)

ORIGINAL SIGNED BY

Steven Linder
Project Manager
Waste Management Division
U.S. EPA Region 9

109342



Los Angeles Regional
Water Quality Control
Board / U.S.
Environmental
Protection Agency
Region 9



CHARNOCK MTBE PROJECT

CHARNOCK SUB-BASIN INVESTIGATION AREA
AND POTENTIAL SOURCE SITE LOCATIONS
LOS ANGELES AND CULVER CITY
CALIFORNIA

PROJECT NO.

DATE

6/28/2000

FIGURE

1

ATTACHMENT A

**SCOPE OF WORK
FOR
ORDER DOCKET NO. RCRA 7003-09-2001-0001
PARTICIPATION AND COOPERATION
IN INITIAL REGIONAL RESPONSE
TO ADDRESS
MTBE AND OTHER GASOLINE
CONSTITUENT CONTAMINATION
IN THE CHARNOCK SUB-BASIN**

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Figure 3	Area 1 Proposed Assessment Locations

A. INTRODUCTION

This Scope of Work (SOW) is provided as Attachment A to an Order directed to Respondents, Chevron USA, Inc., Exxon Mobil Corporation, Atlantic Richfield Company (d.b.a. Arco), Conoco, Inc., Douglas Oil Company of California, Kayo Oil Company, Unocal Corporation, Mobil Oil Corporation, Tosco Corporation, Thrifty Oil Company, Best California Gas, Ltd., Kazuho Nishida, HLW Corporation and Winall Oil Company (collectively "Respondents"), by the United States Environmental Protection Agency ("EPA"), Region 9 (Administrative Order U.S. EPA Docket No. RCRA 7003-09-2001-0001) ("IRR P&C Order").

The purpose of the P&C IRR Order, including this SOW, is to require Respondents to participate and cooperate with Respondents to EPA's Administrative Order on Consent for Interim Regional Response ("AOC") dated July 26, 2000, U.S. EPA Docket No. RCRA 7003-09-2000-003, to Shell Oil Company, Shell Oil Products Company and Equilon Enterprises (collectively "Shell" or "the Shell Respondents"). Respondents to the P&C IRR Order are required to participate and cooperate with the Shell Respondents in performing all of the tasks detailed in the AOC and presented in this SOW. Shell has already begun performing these tasks. These initial regional response activities within the Charnock Sub-Basin are necessary to restore the Charnock Sub-Basin to its beneficial use as a drinking water supply and to remediate the MTBE and other gasoline contaminants within the Charnock Sub-Basin Investigation Area.

The deadlines for performance of the tasks in this SOW run from July 3, 2000 or from Agency approval dates. Respondents shall participate and cooperate with Shell in performing the required tasks on the schedules provided herein. Respondents also remain responsible for the additional reporting requirements of Section VI (Work to be Performed and Participation and Cooperation) of the IRR P&C Order, including the quarterly progress reports documenting Respondents' compliance efforts.

B. DEFINITIONS FOR SCOPE OF WORK

Unless otherwise expressly provided herein, terms used in this SOW, and the P&C IRR Order of which it is a part, shall have the meanings that are assigned to them in the Resource Conservation and Recovery Act (RCRA) and in the California Water Code. In the event of any conflict between RCRA and the California Water Code, the Agencies will determine the meaning of the term at issue. Except where otherwise noted, the definitions provided in the P&C IRR Order will apply to this Scope of Work, as modified and/or supplemented by the following definitions:

"Agencies" shall mean either (1) the RWQCB, or (2) the USEPA, or (3) both of these agencies acting jointly.

"Agencies' General Requirements" shall mean the requirements issued by the Agencies dated June 19, 1997 and modifications dated September 18, 1997, October 16, 1997, January 15, 1998, and September 22, 1999 and any subsequent updates.

"Charnock Sub-Basin" shall mean the area of Los Angeles and Culver City bounded by the Overland Fault to the east, the Ballona escarpment to the south, the Charnock Fault to the west, and the base of the Santa Monica Mountains to the north.

“Charnock Sub-Basin Investigation Area” shall mean the area within which the Agencies have, to date, identified Potential Source Sites, encompassing approximately a one and one quarter mile radius from the City of Santa Monica’s Charnock Wellfield.

“Charnock Wellfields” or “the Wellfields” shall mean the drinking water supply wells previously operated by the City of Santa Monica (COSM) at 11375 Westminster Avenue, Los Angeles, and the drinking water supply wells previously operated by the Southern California Water Company (SCWC) at 11607 and 11615 Charnock Road, Los Angeles.

“Contamination” shall mean the presence of contaminants and a condition of pollution, as defined in the California Water Code.

“Days” shall mean calendar days, unless otherwise specified.

“DHS Policy 97-005” shall mean the California Department of Health Services November 5, 1997 Policy Memo 97-005 Policy Guidance for Direct Domestic Use of Extremely Impaired Sources

“Effective Date” shall mean July 3, 2000.

“Impacted Parties” shall mean the COSM and SCWC.

“Potential Source Sites” or “PRP Sites” shall mean the underground gasoline storage tank systems and gasoline product pipelines and the property on which they are located within the Charnock Sub-Basin Investigation Area identified on Figure 1 to the Agencies’ SA/AOC.

“Production aquifer” or “Silverado aquifer” shall mean the saturated zone within the investigation area that a) in areas where the San Pedro aquitard is present, is located below, and separated from, the Shallow Unnamed aquifer by the confining layer referred to as the San Pedro aquitard; and b) in areas where the San Pedro aquitard is absent, is the first laterally extensive saturated zone encountered.

“Release” in this Scope of Work shall mean “discharge” or “disposal” as those terms are used in RCRA and the California Water Code.

“Respondents” shall mean Chevron U.S.A. Inc., Exxon Mobil Corporation, Atlantic Richfield Company (d.b.a. Arco), Conoco, Inc., Douglas Oil Company of California, Kayo Oil Company, Unocal Corporation, Mobil Oil Corporation, Tosco Corporation, Thrifty Oil Company, Best California Gas, Ltd., Kazuho Nishida, HLW Corporation and Winall Oil Company.

“San Pedro aquitard” shall mean the confining layer that separates the Shallow Unnamed aquifer from the Production (Silverado) aquifer in some portions of the Charnock Sub-Basin Investigation Area. In the Charnock Sub-Basin Investigation Area, the top of the San Pedro aquitard is typically found at a depth of approximately 30 to 40 feet below mean sea level. The San Pedro aquitard varies in thickness and is locally absent in some portions of the Investigation Area. The textural composition of the San Pedro aquitard varies from clay to silty sand.

“Shallow Unnamed aquifer” shall mean the laterally persistent saturated zone that exists on top of the San Pedro aquitard. The base of the Shallow Unnamed aquifer, where present, occurs above the San Pedro aquitard. The Shallow Unnamed aquifer is absent at some locations within the Charnock Sub-Basin Investigation Area.

“Site” or “the Charnock Sub-Basin MTBE Site” shall mean the extent of MTBE and other gasoline constituent contamination in the Charnock Sub-Basin

“Shell” or “Shell Respondents” shall mean Shell Oil Company, Shell Oil Products Company, and Equilon Enterprises LLC.

“Source Sites” or “Source Site Facilities” shall mean the property and related underground gasoline storage tanks systems within the Charnock Sub-Basin Investigation Area, identified in Attachment B to the SA/AOC.

“Water Replacement” shall have the definition provided for that term in EPA Orders Docket Nos. RCRA 7003-09-99-0007 and RCRA 7003-09-2000-0002.

C. PROJECT PLANNING AND PROGRESS REPORTING

Task 1 – Work Plan and Project Schedule

Task 1.1 – Work Plan

The Respondents shall submit a detailed work plan for completing all of the tasks in this SOW within 45 days of the effective date of the SA/AOC. The work plan shall include a work breakdown structure for all tasks included in this SOW and all sub-tasks to be completed by the Respondents. The written plan shall also include a Sampling and Analysis Plan (SAP), Quality Assurance Plan (QAP) and Health and Safety Plan (HASP) to cover all work that the Respondents anticipate will be performed to complete the tasks required by this SOW. The SAP, QAP and HASP shall be consistent with EPA guidance and the General Requirements. The Respondents shall also include a detailed description of the complete project team including name, role, company affiliation, address, phone number, mobile phone number/pager, e-mail address, fax number, and Curriculum Vitae (CV). The project plan shall also include a project team organization chart showing lines of authority. When changes occur in the project plan, SAP, QAP, HASP, project schedule and/or project team, the appropriate documents shall be updated and submitted along with the Monthly Progress Report described in Task 2.

Task 1.2 – Project Schedule

The Respondents shall create an overall Project Schedule utilizing MS Project 98 (or an equivalent software package upon approval of the Agencies). This Project Schedule shall be updated by the Respondents on a monthly basis and included in both electronic and hard copy formats in the Monthly Progress Report.

Task 2 – Progress Reporting

The Respondents shall provide Monthly Progress Reports in both electronic and hard copy formats. This reporting will enable the Agencies to track and oversee progress on the project. These reports shall include the following:

- Progress for the reporting period on each individual task and sub-task.
- Overall progress to date on each individual task and sub-task.
- Incident reports, access problems, public inquiries/complaints, regulatory issues and contacts.
- A summary of all environmental sampling activities pursuant to this SOW during the reporting period.

- A description of the work anticipated to be performed on each individual task and sub-task during the following quarter.
- A copy of all final minutes from technical meetings (see below).
- A list of all outstanding action items to be addressed by the Respondents, Agencies and Impacted Parties in the following quarter.
- A description of any other problems encountered or anticipated in performing the Tasks required by this SOW and Respondents' plans for addressing these problems.

Task 3- Technical Meetings

Pursuant to the AOC, the Shell Respondents are required to schedule and host monthly (or at another frequency as approved by the Agencies) technical meetings with Agencies and Impacted Parties to discuss project progress, data, analysis of data, action items, and other issues. Upon reaching agreement with the Agencies and the Shell Respondents, the IRR P&C Respondents' technical representatives shall participate in these technical meetings. If no agreement is reached, the Agencies will hold separate periodic technical meetings with the IRR P&C Respondents to discuss project progress, data, analysis of data, action items, and other issues.

The purpose of these meetings will be to provide a forum, on a regular basis, to discuss technical and project management issues related to implementation of this SOW.

D. ANALYSIS OF ALTERNATIVES FOR INTERIM PROVISION OF DRINKING WATER

The purpose of the tasks in this section is to evaluate and recommend longer term interim drinking water response measures which could be implemented to provide the Impacted Parties with drinking water until the Agencies determine, if any further action is necessary to supply water to the Impacted Parties.

Task 4 – Interim Provision of Drinking Water Information Summary Report

The Information Summary Report is required in order to provide the data necessary to effectively and thoroughly evaluate the options for interim provision of drinking water.

The Respondents shall prepare a report that summarizes information relevant to the analysis of options for the provision of drinking water. This report shall include but is not limited to:

Charnock Sub-Basin Municipal Water Supply Production Facilities and Operations:

- Water supply well (public, industrial, agricultural, etc.) construction details (all current and past wells), where available.
- The locations of all water supply wells.
- A general history of wellfield development and operations.
- Historical water production rates in the Charnock Sub-Basin (average, peak yearly, monthly, daily).
- Historical COSM and SCWC drinking water demand rates (average, peak yearly, monthly, daily)
- A review and summary of all wellfield operational permits and permit conditions.
- COSM and SCWC Drinking water infrastructure description relevant to the Charnock Project.

- Facility layout
- Equipment list
- Water storage and distribution facilities
- Water conveyance facilities
- Water treatment facilities
- Staffing requirements
- Current Permits
- Sub-Basin water balance information
- The impact of contamination (directly and indirectly) on such infrastructure (e.g. chloramines and reservoir issues).

Impact of possible facility modifications:

- The impact of possible facility modifications, including but not limited to a separate well-head treatment plant, on drinking water infrastructure.
- Utilities availability (e.g. power, discharge facilities) for possible facility modifications.
- Permitting issues for possible facility modifications, including a separate well-head treatment plant.

Reports Required for DHS Review of Use of Extremely Impaired Sources

- A separate report to comply with Task 1 of the Department of Health Services (DHS) Policy 97-005, including a review and summary description of hydrogeologic and contaminant conditions in the Charnock Sub-Basin.
- A separate report to comply with Task 2 of the DHS Policy 97-005, including a review and summary description of the quality of groundwater within the Charnock Sub-Basin.

Task 5 – Completion of Treatability Technology Performance Report

The Treatability Technology Performance Report is required to provide the information necessary to evaluate the ability of various treatment technologies to effectively remove MTBE and other gasoline constituent contamination from contaminated groundwater.

The Respondents shall prepare a Treatment Technology Performance Report. Technologies included in the report shall include at a minimum GAC, AOP, resin adsorption, and air stripping. The report shall include all data generated as part of the Charnock Wellfield Startup LLC treatability testing, research and analysis, and as part of the treatability testing and treatment at potentially responsible party (PRP) Site 11 (Abrams Shell). Additionally, the report shall include a literature review/summary of all relevant information regarding the treatment of fuel oxygenates in drinking water. The report shall address MTBE, TBA, and other gasoline constituent contamination found in the Charnock Sub-Basin that may be relevant to pump and treat remediation and drinking water wellhead treatment.

For each technology addressed, the report must include mass balances identifying contaminant destruction and/or transformation mechanisms (e.g. biodegradation, sorption, oxidation). The report shall also identify potential treatment by-products.

The report shall discuss all bench scale and pilot studies conducted at PRP Site 11, the Charnock Wellfield, the Arcadia Wellfield, and any other bench scale studies in other settings using Charnock Sub-Basin water. The report shall include descriptions of process configuration and flow rates. The report shall discuss and summarize all influent and effluent results for constituents analyzed, formation of byproducts and treatment for residuals, and describe analytical methods.

The report shall also provide the details related to problems encountered during process implementation and solutions applied.

Task 6 – Analysis and Recommendation of Alternatives for Drinking Water Response

The purpose of this task is to evaluate and recommend longer term interim drinking water response measures which could be implemented to provide the Impacted Parties with drinking water until the Agencies determine, if any, further action is necessary to supply water to the Impacted Parties.

Respondents shall conduct an Analysis of Alternatives (“Drinking Water AoA”) and prepare a Respondents’ Interim Response AoA Report (“Drinking Water RAoA”). The Drinking Water RAoA shall present an evaluation of Charnock Sub-Basin interim response alternatives, including all of the analyses, information and evaluations required in this Task 6, and Tasks 6.1 through 6.10. The Drinking Water RAoA shall recommend a proposed alternative(s) that will prevent exposure to contaminated groundwater and insure a reliable source of drinking water. Respondents may also be required to provide a Revised Drinking Water RAoA.

Respondents shall conduct the Drinking Water RAoA in accordance with the following evaluation criteria (where applicable).

The Four General Criteria

- (1) **Overall protection of human health and the environment** - how the alternatives provide human health and environmental protection.
- (2) **Attainment of Response Objectives** - ability of alternatives to achieve the purposes prescribed for response measures pursuant to this SOW.
- (3) **Control of sources of releases** (and impact on control of sources of releases) - how the alternative reduces or eliminates (to the maximum extent possible) further releases, and prevents migration.
- (4) **Compliance with standards** - how alternatives assure compliance with existing standards and requirements set by federal, State, and local agencies that were put in place to protect human health and the environment (e.g., DHS permit requirements, air permitting requirements, noise abatement requirements, zoning requirements (including any conditional use requirements), fire code requirements).

Any interim response measures proposed, as a viable alternative must, at a minimum, meet the four General Criteria to the maximum extent practical. All viable alternatives shall then be compared using the six Decision Factors.

The Six Decision Factors are as follows:

- (1) **Long- term reliability and effectiveness** - magnitude of residual risk, including the adequacy and reliability of controls;
- (2) **Reduction of toxicity, mobility or volume of wastes** - Treatment process used and materials treated, amount of hazardous constituents destroyed or treated, degree of expected reduction in toxicity, mobility, or volume, degree to which treatment is irreversible, type and quantity of residuals remaining after treatment;

- (3) **Short-term effectiveness** - Protection of community during response actions, protection of workers during response actions, environmental impacts, and time until response action objectives are achieved;
- (4) **Implementability** - Ability to construct and operate technology; reliability of technology; ease of undertaking additional interim response measure(s) if necessary; ability to monitor effectiveness of interim response measure(s); coordination with other Agencies; availability of off-site treatment, storage and disposal services and specialists to the extent required for the interim response measure(s); availability of prospective technologies; availability of land; availability of adequately trained operation and maintenance personnel and replacement equipment; logistics;
- (5) **Cost** - Capital costs, general and administrative costs, operating and maintenance costs, all discounted to present worth (utilizing range of discount rates (e.g. 4%-8%)) ; and
- (6) **Community Acceptance** - Assessment of the issues and concerns the public may have regarding each of the alternatives.

The order of the decision factors listed is not intended to establish an ordinal ranking, nor does it suggest the relative importance each factor might have at any particular site.

Task 6.1 - General Response Alternatives Identification and Screening Evaluation

Respondents shall analyze all interim drinking water response alternatives with respect to the primary goals of the interim measure(s), which is to prevent exposure to contaminated groundwater and ensure a reliable source of drinking water. For problems involving groundwater contaminated with volatile organic contaminants, the presumptive approach involves the following general response alternatives: 1) institutional controls, 2) plume control, 3) replacement water supply, and/or 4) wellhead treatment. At a minimum, each of these alternatives must be analyzed.

Respondents must conduct an analysis of these general response alternatives and recommend a preferred general response or combination of general response alternatives. This analysis shall also identify the general response alternatives that the Respondents propose to eliminate from further consideration and the rationale for their elimination.

Based on the preferred general response or combination of general response alternatives, Respondents shall identify the universe of interim response alternatives.

The Respondents shall screen the interim response alternatives to eliminate those that would likely prove infeasible to implement given the site-specific conditions. The screening is accomplished by evaluating technology limitations (e.g., for volume, area, contaminant concentrations, interferences, etc.) and using contaminant and site characterization information from previous investigations to screen out technologies that cannot be fully implemented at the Site. The screening process must focus on eliminating those response alternatives that have severe limitations given the site-specific conditions. The screening step shall indicate one or more interim response alternatives that Respondents propose to evaluate in detail during Tasks 6.2 through 6.11.

At a minimum, Respondents must perform a detailed evaluation (Tasks 6.2 through 6.11) of an interim response alternative that is capable of: 1) delivering at least 6897 acre-ft of drinking water per year from the Charnock Wellfields to the Impacted Parties; 2) reducing an influent concentration of MTBE from 2 mg/l and TBA from 200 µg/l to levels acceptable for serving as

drinking water; and 3) satisfying a set of peak flow delivery conditions from the Charnock Wellfields to be determined by the Agencies. The Agencies will specify the set of peak flow delivery conditions to be satisfied by this interim response alternative in the approval of the Task 6.1 deliverable.

Respondents must fully document the screening of alternatives. Respondents shall list the alternatives proposed for further evaluation and document the reasons for excluding any alternatives. Respondents shall prepare a table that summarizes their findings.

The Respondents shall submit this evaluation as a letter report to the Agencies entitled “General and Interim Response Alternatives Identification and Screening Evaluation.”

Tasks 6.2 through 6.10 provide the requirements for the Analysis of Alternatives Detailed Evaluation Report to be submitted pursuant to Task 6.11.

Task 6.2 - Institutional Control Alternatives Detailed Evaluation

Respondents shall evaluate the ability of institutional control options to prevent exposure to contaminated groundwater and insure a reliable source of drinking water.

Task 6.3 - Plume Control Alternatives Detailed Evaluation

Respondents shall evaluate the ability of plume control options (hydraulic control of contaminant migration) to prevent exposure to contaminated groundwater and insure a reliable source of drinking water.

Task 6.4 - Water Replacement Alternatives Detailed Evaluation

Respondents shall evaluate the ability of water replacement options to prevent exposure to contaminated groundwater and insure a reliable source of drinking water. The Respondents shall evaluate options for providing replacement water to the COSM and SCWC. This evaluation shall utilize the criteria presented above to analyze water replacement options including but not limited to continued purchase from Metropolitan Water District of Southern California (MWD) or City of Los Angeles, purchase and delivery of water from another private water supplier, construction/use of wells in alternative locations, and surface water capture and treatment (including salt water desalination). All options evaluated shall consider the general criteria and decision factors above, including any required treatment to meet DHS drinking water standards and other applicable, or relevant and appropriate federal, State, and local laws, regulations, and standards.

Task 6.5 - Wellhead Treatment Alternatives Detailed Evaluation

Respondents shall evaluate the ability of wellhead treatment options to prevent exposure and insure a reliable source of drinking water. The Respondents shall identify, evaluate, and recommend a treatment train technology approach for ex-situ removal of MTBE, other gasoline constituents, and any other Contamination in the extracted groundwater. The evaluation criteria recommended above shall be utilized for the evaluation. All treatment train technology approaches shall be capable of removing MTBE, other oxygenates, degradation by-products, other gasoline constituents, and any other Contamination in the Charnock Wellfields’ source water down to levels acceptable for drinking water.

At a minimum, Respondents shall evaluate air stripping, activated carbon, advanced oxidation processes (AOP), resin adsorption, biological treatment and all appropriate combinations of these

technologies. If Respondents have identified other treatment methodologies, in addition to those listed above, they may be included as part of Respondents' evaluation.

The report shall include information including scale and configuration of extraction and treatment, remediation time frame, rates of flow for treatment, and permits required (local, state, federal). The Respondents shall evaluate transformation of contaminants through each unit process and discuss technologies for treatment/management of byproducts. The report shall discuss issues including health and safety concerns and community relations concerns. The report shall present Capital and O&M costs for a full Wellfields flow treatment system for all the technologies. The report shall discuss disposal options for treated groundwater during pilot testing, and startup periods and/or maintenance operations.

Task 6.5.1 - Treatment Plant Effluent Management Options

Respondents shall evaluate options for effluent management for interim response measures that include the extraction and treatment of groundwater. The evaluation shall utilize the criteria provided in Task 6 above and shall include, at a minimum, the following options: discharge to the sanitary sewer, discharge to the storm drain system, reinjection, delivery for domestic use, and/or delivery for other beneficial uses.

Task 6.5.2 - Treatment System Siting Evaluation

Respondents shall identify, evaluate, and compare sites that could be used for construction and operation of a groundwater treatment plant for removal of MTBE and other oxygenates, degradation by-products, and/or other gasoline constituent contamination from the water produced from the Charnock Wellfields. Respondents shall also recommend the potential sites that they find to be the most suitable for this purpose.

CRITERIA FOR DETAILED EVALUATION OF TREATMENT SYSTEM SITING

Due to the uncertainties related to (a) the spatial distribution of contamination affecting the Charnock Wellfields, (b) the concentrations of contaminants expected to be in each production well's effluent, (c) duration of aquifer restoration, and (d) the fluctuations in water demand of COSM and SCWC customers, Respondents shall include in their evaluation sites that can accommodate a wellhead treatment plant and water storage facilities that meet the following criteria:

1. Capable of at least 30 years of operation;
2. To the maximum extent practicable, the preferred sites shall be in areas currently zoned commercial, manufacturing or industrial;
3. To the maximum extent practicable, the preferred site locations shall be identified that have the least negative long-term impacts on the community;
4. To the maximum extent practicable, Respondents shall evaluate potential sites with respect to the ability to obtain ownership, leasehold, or other entitlement for use for a 30 year period, all necessary right of ways, utilities, and permits (including conditional use permits) for construction of the groundwater treatment plant, water storage facilities and any associated distribution piping systems; and
5. The analysis must consider that siting and treatment plant and water storage facility construction thereon must comply with all applicable requirements in the California

Environmental Quality Act (CEQA), including the preparation of a full Environmental Impact Report (EIR), if deemed necessary by the lead agency for CEQA.

Task 6.5.3 - Site Selection Report

Respondents shall prepare a Site Selection Report that includes the following information:

- 1) Identification of Respondents' preferred site and two alternate sites; a discussion of how sites were chosen; a discussion of costs, ability to obtain permits, impacts on surrounding community, current land use, zoning of site and surrounding areas, and current site ownership; a map showing each proposed site in relation to the Charnock Wellfields and Arcadia Water Distribution Facility;
- 2) A discussion of the availability for purchase or lease, in order to utilize each site for a groundwater treatment plant;
- 3) A discussion of the availability of the necessary right of ways, utilities, and permits in order to construct and operate a groundwater treatment plant at preferred and alternate sites; and
- 4) A discussion of community acceptance issues associated with each potential site.

Task 6.6 – Regulatory and Institutional Analysis of Alternatives

As a part of the AoA, Respondents shall identify, evaluate and describe how the following requirements affect implementation of all alternative remedies:

- Permit requirements.
- Federal laws and regulations.
- State laws and regulations.
- Local laws, regulations, and ordinances.
- Building codes.
- Land use/zoning requirements/restrictions.
- Noise restrictions.

Task 6.7 – Hydraulic Analysis for Pumping Alternatives

For all alternatives involving groundwater pumping in either the Charnock Sub-Basin (as part of tasks 6.3, 6.4 and 6.5), or in other sub-basins of the Santa Monica Basin (Task 6.5), Respondents shall provide the following information for each of the alternatives:

- Figures depicting 1, 5, 10, 25, 50 and 100 year capture zones (e.g., flowlines) with pathline arrowheads at approximately 1 year intervals.
- Tabular results of water balance, including domain boundary inflows/outflows.
- Maps of head distribution (equipotentials) throughout the entire domain.
- Tabular list of all model hydrogeological input parameters used (with sources referenced).
- Results of steady state and transient model calibrations, including convergence criteria and uncertainty analysis. Transient calibrations for both pump tests and historic basin pumping periods should be provided.

Task 6.8 - Effective Monitoring and Treatment Analysis for All Alternatives Involving Treatment of Water from an Extremely Impaired Source for the Purpose of Providing Drinking Water (DHS 97-005 Item 4)

The Respondents shall conduct the analysis required by Item 4 of DHS Policy 97-005 for each alternative involving treatment of water from an extremely impaired source for the purpose of providing drinking water.

Task 6.9 – Human Health Risks Associated with the Failure of Drinking Water Treatment Alternatives.

The Respondents shall conduct the analysis required by Item 5 of DHS Policy 97-005 for each alternative involving treatment of water from an extremely impaired source for the purpose of providing drinking water.

Task 6.10 – Identification of Alternatives to the Use of the Extremely Impaired Source and Compare the Potential Health Risk Associated with these to the Project’s Potential Health Risk.

The Respondents shall perform Item 6 of DHS Policy 97-005.

Respondent shall summarize the viable alternatives (identified as part of Task 6.1) to use of the extremely impaired source. The Respondents shall then assess risk associated with each alternative, including the risks as a result of failure and the probability of failure of each alternative, and compare risk potential to the risk potential for the use of the extremely impaired source.

Task 6.11 - Analysis of Interim Alternatives Reporting

As part of reporting, the Respondents shall submit:

- (a) General and Interim Response Alternatives Identification and Screening Evaluation (Task 6.1),
- (b) Analysis of Alternatives Detailed Evaluation Report (Tasks 6.2 through 6.10)

These reports shall be submitted in accordance with the Schedule of Compliance in Section I of this SOW.

The Respondents’ Drinking Water Analysis of Alternatives Detailed Evaluation Report (Drinking Water RAoA) shall include a detailed analysis of alternatives and the Respondents’ recommended alternative for interim provision of drinking water. The report shall include all of the information and analyses required by all sub-tasks of Task 6 of this SOW.

E. REGIONAL INVESTIGATION (RI)

Task 7 – Quarterly Groundwater Monitoring

The purpose of Task 7 is to require a comprehensive groundwater monitoring program for all monitoring wells in and near the Charnock Sub-Basin Investigation Area, and to require a comprehensive analysis of all groundwater data on a quarterly basis for all groundwater monitoring activities for the Charnock Sub-Basin Investigation Area.

“Respondents’ Monitoring Wells” shall mean wells or any other groundwater monitoring devices (piezometers, direct-push probe, or multi-channel well) installed by, on the property of, or otherwise exclusively owned by Respondents.

“Other Monitoring Wells” shall mean wells or any other groundwater monitoring devices (piezometers, direct-push probe, or multi-channel well) installed by, on the property of, or otherwise exclusively owned by parties other than Respondents.

“Jointly Owned Monitoring Wells” shall mean all wells installed by Geomatrix Consultants, Inc. (Geomatrix), that were jointly installed and paid for by the respondents and others during the Charnock Sub-Basin regional investigation activities conducted during 1996 to 2000.

Task 7.1 – Quarterly Regional Groundwater Well Gauging, Sampling, and Analysis

On a quarterly basis on the schedule provided in Table 2 (SOW Section I, Schedule of Compliance), Respondents shall gauge groundwater levels at, and collect and analyze groundwater samples from, all Respondents’ Monitoring Wells and Jointly Owned Monitoring Wells in accordance with the Agencies’ requirements set forth in the approved Work Plan to be developed under Task 1.1 of this SOW. The Respondents shall follow the analytical protocol specified by the Agencies in the Agencies’ General Requirements, except as otherwise modified pursuant to the SA/AOC and approved Work Plan. The quarterly analytical suite shall include benzene, toluene, ethylbenzene and total xylenes (BTEX), total petroleum hydrocarbons as gasoline (TPHg), fuel oxygenates (including MTBE, TBA, DIPE, ETBE, and TAME), and any other PPCs (potential pollutants of concern).

The second quarterly event of each year shall include reporting of volatile organic compounds (VOCs) and tentatively identified compounds (TICs) from USEPA Method 8260B, in accordance with the procedures set forth in the approved Work Plan developed under Task 1.1 of this SOW. Should VOCs or a TIC of concern to the Agencies be detected in any well, then subsequent samples from such a well shall continue to be analyzed for the complete list of analytes in USEPA Method 8260B (including TICs, if necessary), until such VOCs or TIC are not detected or are no longer of concern to the Agencies.

In the Work Plan developed under Task 1.1 of this SOW, Respondents shall propose a list of selected Respondents’ Monitoring Wells and Jointly Owned Monitoring Wells from which to collect and analyze groundwater samples for general water quality parameters (pH, alkalinity, major ions). At the Agencies’ discretion, the Respondents shall also analyze groundwater samples collected from these wells for other parameters, including biodegradation indicators.

Task 7.2 – Regional Quarterly Monitoring Results Table

Respondents shall submit a Regional Quarterly Monitoring Results Table (QMR Table) in accordance with the schedule set forth in Table 2 of this SOW. The QMR Table shall contain the following information from Jointly Owned Monitoring Wells and additional monitoring wells installed during implementation of Task 12 of this SOW:

- 1) Well name,
- 2) Screen Interval (elevation and feet below ground surface),
- 3) Filter pack interval (elevation and feet below ground surface),
- 4) Casing diameter and construction,
- 5) Total depth (elevation and feet below ground surface),
- 6) Date of installation,
- 7) Water level (elevation and feet below ground surface),
- 8) Water level change since last water level gauging event,
- 9) MTBE and other oxygenate concentrations and detection limits,
- 10) TPHg concentration and detection limits,
- 11) BTEX concentrations and detection limits, and

- 12) Other analyte concentrations and detection limits

Task 7.3 - Charnock Sub-Basin Investigation Area Quarterly Groundwater Monitoring Report

The Respondents shall submit Charnock Sub-Basin Investigation Area Quarterly Regional Groundwater Monitoring Reports in accordance with the schedule set forth in Table 2 of this SOW. This report shall contain the all quarterly monitoring data, and analysis of the data, from all Respondents' Monitoring Wells, Other Monitoring Wells, and Jointly Owned Monitoring Wells to provide a broader picture of hydrogeologic and contaminant conditions within the Charnock Sub-Basin Investigation Area. This report shall be provided in the format specified in Section H of this SOW and shall include the analysis specified in the approved Work Plan developed under Task 1.1 of this SOW.

Task 8 – Database / Geographical Information System

The purpose of this task is to create and provide the tools necessary for effective evaluation of the data generated pursuant to all investigations of MTBE and other gasoline constituents affecting the Charnock Sub-Basin.

Task 8.1 – Environmental Database Update, Data Objects Analysis, and Quality Assurance

The Respondents shall provide a relational database utilizing Arcview (or an equivalent software package upon approval by the Agencies) which updates the data and includes the data elements contained in the Geomatrix 7/99 database. The database shall include all environmental data generated from environmental investigations occurring between 1/1/1990 – 12/31/1999 for all Potential Source-Sites identified as part of the Charnock MTBE Investigation and for all regional investigation activities. The database will also include data for the period after January 1, 1980 provided to the Respondents in the appropriate electronic format.

The Agencies will require all parties with responsibility for Potential Source-Sites to provide all environmental data generated from environmental investigations occurring after January 1, 1980 in an electronic format to be specified by the Agencies in consultation with Respondents.

The Respondents shall propose a QA/QC process and perform all QA/QC necessary in order to certify accuracy of data transcription into the database in accordance with the QA/QC process approved by the Agencies. The database shall include all pipeline data, UST site investigation data, and regional investigation data.

Task 8.2 -- GIS Enhancements

The Respondents shall develop GIS files delivered to the Agencies as part of the database submittal (Task 8.1) to add to and update the following coverages in the Geomatrix 7/99 database:

- Current Aerial Photograph
- Source-Sites UST systems detail plans (1980-present)
- Historical and Active Production Wells
- Gasoline Product Pipelines
- Water Distribution Supply Lines
- Monitoring Wells
- Vapor Wells
- Soil Borings

- Hand Auger Borings
- Soil Gas Sample Points
- Faults
- Site Plans Showing Historical and Current Geo-referenced Sample Locations

The coverages above shall be layered on a scaled base map of the region. The GIS objects such as sampling locations shall be linked to the database with geo-referencing.

Task 8.3 – Dedicated Computers with Pre-Loaded Database/GIS System

The Respondents shall loan, to the Agencies and Impacted Parties, stand-alone PC workstations (PCs) and all peripheral equipment (i.e. monitor, keyboard, mouse, etc.) necessary to operate the Database/GIS System. The PCs shall be delivered ready to operate (“plug-and-play”), pre-loaded with all the necessary software and data files to operate the Database/GIS System. Respondents shall make these computers available, at a minimum, through the termination of Respondents’ obligations pursuant to the SA/AOC. Respondents may then request that the loaned computers be returned within 180 days or negotiate an extension of the loan.

A total of five complete workstations will be loaned by Respondents. One complete workstation and peripheral equipment shall be loaned to each the following:

- A) Regional Board
- B) US EPA
- C) US EPA Contractor
- D) COSM Contractor
- E) SCWC Contractor

Task 8.4 – Quarterly Updates of Database/GIS System

The Respondents shall prepare and submit (on Compact Disks (CDs)) updates to the database/GIS system on a quarterly basis. These CDs shall include updated database and GIS files, with instructions on how to integrate the update with the existing Database/GIS System. This update shall be delivered as part of task 7.2.

Task 9 – Conceptual Flow and Transport Model Report

Respondents shall determine if any of the additional data collected since the original Geomatrix conceptual model was completed has caused any significant changes in the fundamental understanding of the hydrogeologic flow system in and around the Charnock Sub-Basin and shall submit this analysis as part of a Conceptual Flow and Transport Model Report. In this report, the Respondents shall also provide an update/revision to the Conceptual Model Report for the Charnock Sub-Basin previously submitted to the Agencies by Geomatrix on behalf of Shell, Chevron, and Exxon and include a conceptual discussion of MTBE and other gasoline constituent fate and transport in the Charnock Sub-Basin.

Task 10 – Numerical Groundwater Flow Model and Report

Numerical groundwater flow modeling is required to synthesize and analyze the multitude of factors in complex groundwater and contaminant problems and the interaction between these factors. Therefore, the conceptual model (Task 9) shall form the basis for development of a numerical model.

The numerical model shall allow for a more detailed and rapid synthesis, analysis and interpretation of the multitude of factors and their interaction. Thus, the numerical model shall be

available to gain insight into the controlling parameters in the Sub-Basin and as a framework for assembling and organizing field data and formulating ideas about the system dynamics both regionally and locally. The model may also be used to help establish locations and characteristics of aquifer boundaries and assess the quantity of water within the system (including safe yield estimates), the amount of recharge to the aquifer, and movement of water through the system. In addition, the numerical model may be used to evaluate the pathways by which contaminants could have migrated from their release point to the Wellfields and to simulate the consequences of a proposed remedial action, such as pumping groundwater from a specific well location.

Task 10.1 Groundwater Flow Modeling

The model shall be constructed to meet the following objectives: evaluate regional measures needed for the Silverado and shallow unnamed aquifers to control the movement of groundwater affected by MTBE and other gasoline constituent contamination and to protect areas of unaffected groundwater, evaluate potential interim restoration measures (Section F of this SOW) to capture and remove groundwater affected by this contamination, provide a tool to evaluate and manage concurrent regional production and remediation of groundwater, and evaluate potential regional groundwater flow pathways from source areas.

Initially, a three-dimensional (3D) groundwater flow model shall be developed for the Charnock Sub-Basin Investigation Area. The steps involved in the development of a 3D groundwater flow model include the following:

- Development of a conceptual hydrogeologic flow model (Task 9) based upon data collected in the field as part of investigations performed in the Sub-Basin, background hydrogeologic information, and published groundwater texts.
- Selection of an available commercial groundwater flow code that could satisfy the modeling objectives through the implementation of these tasks.
- Establishing a hydro-stratigraphic framework and construction of a numerical flow model based upon the conceptual flow model.
- Discretization of hydraulic parameters within the model domain.
- Calibration of the numerical flow model to approximate field head-and-flow relationships (both steady-state and transient calibrations).
- Modification of the framework, model structure, hydraulic parameter values or their discretization through sensitivity analysis to improve the calibration.
- Combination of the numerical flow model with a particle-tracking code.
- Modification of the model framework or structure, hydraulic parameter values and their discretization, through sensitivity analysis to improve the calibration.
- Comparison of the results of the numerical flow with the conceptual flow model.
- Identification of data gaps that may be precluding the development of the most representative conceptual model and approach, and in turn, the best numerical groundwater flow model.
- Recommendations for the collection of the data necessary to fill in the data gaps.
- Refinement of the conceptual flow model and approach, including revision and re-calibration of the numerical groundwater flow model, based upon additional data.

Task 10.1.1 – Submittal of Groundwater Flow Model

This model shall be submitted to the Agencies and Impacted Parties in electronic format on a computer system capable of displaying and modifying the input parameters, running modeling calculations, and displaying output results on a CRT and in hard copy. The computer system provided for this task can be the same system submitted pursuant to Task 8.3.

Task 10.1.2 – Groundwater Flow Modeling Report

Respondents shall prepare a Numerical Groundwater Flow Model Report that contains information delineated in the “Standard Guide for Application of a Ground-Water Flow Model to a Site-Specific Problem,” ASTM, Volume 4.09, Standards D 5447-93, D 5490-93, D 5609-94, D 5610-94, D 5611-94. Documentation for the groundwater flow model must include the following elements.

- a. Conceptualization of the hydrologic system, including definition of boundary conditions, geologic controls (layer thickness, continuity, and lithologies at both the regional and site scales), and hydrologic controls (aquifer properties, hydraulic gradients, and fluxes in/out of the study area, such as precipitation, ground water/surface water interactions, extraction, etc.). A water budget of inflows and outflows should be developed as part of this effort. The conceptual model for this system and the controls on ground-water flow should be discussed in detail and rationale with references to supporting data provided for each aspect of the model.
- b. The information base supporting development of the model should be tabulated and provided as geologic and well construction logs, tables of hydraulic heads in monitoring wells depicting temporal variations, temporal history of pumping rates in extraction wells, data supporting recharge estimates, etc. Maps showing the spatial distribution of these data points should be produced. The information base should be critically evaluated for data deficiencies that may result in limitations to the development or use of the model.
- c. Model construction should be documented, identifying the spatial distribution of input parameters (e.g., hydraulic conductivity, water levels, flux rates, etc.) and the temporal distribution (i.e., steady state or transient state). Spatial discretization and grid dimensions should be discussed. The definition of time steps should also be discussed, as appropriate.
- d. Steps used in calibration of the model should be discussed in detail, including methodology, calibration targets, and adjustments in input parameters required for calibration. The residual differences between the observed and simulated variables should be tabulated, plotted, and analyzed.
- e. A sensitivity analysis should be performed to quantify the uncertainty in the calibrated model due to uncertainty in estimates of aquifer properties, boundary conditions, etc. The methodology used in this analysis should be discussed in detail.
- f. A detailed description of the application of the calibrated model in each predictive scenario should be provided. This description should include discussion of the rationale for each scenario that is simulated.

Task 11 – Current Conditions Report

The Respondents shall prepare a Current Conditions Report (CCR) with annual updates which thoroughly describes the MTBE and other gasoline constituent contamination affecting the Charnock Sub-Basin Investigation Area and other areas within the Charnock Sub-Basin, and the steps that have been taken to date to address this problem.

Task 12 - Regional Field Investigation

The Regional Investigation activities discussed herein are required in order to further define the MTBE and other gasoline constituent contaminant distribution, background contaminant conditions, and hydrogeology information concerning the Charnock Sub-Basin Investigation Area. Additional Regional Investigation activities may be identified to support interim provision of drinking water or interim restoration measures.

Task 12.1 – Regional Investigation Work Plan

Respondents shall provide a Work Plan for conducting Regional Investigation to further define the nature and extent of MTBE and gasoline constituent pollution in the Charnock Sub-Basin Investigation Area. Information gained from this investigation will be used for the purposes of (a) provision of interim drinking water and (b) for interim restoration measures within the Charnock Sub-Basin Investigation Area. In the Work Plan, Respondents shall also propose investigation necessary to evaluate MTBE and other gasoline contamination outside of the Investigation Area that may affect the Investigation Area in the future. The investigation shall also include an evaluation of the possible presence of “detached contaminant plumes,” and further define hydrogeologic understanding (e.g. hydrogeologic significance of the Charnock Fault, spatial extent and character of the San Pedro aquitard) of groundwater flow within the Charnock Sub-Basin.

The Respondents shall characterize the following as part of the Regional Investigation

1. The hydrogeologic significance of the Charnock and Overland Faults.
2. The extent and hydrogeologic character of the various hydro-stratigraphic units within, and immediately adjacent to, the Sub-Basin, with particular emphasis on the San Pedro aquitard.
3. Groundwater flow conditions (lateral and vertical) and general water quality within, and immediately adjacent to, the Sub-Basin.
4. The nature, presence, magnitude, extent (lateral and vertical), temporal and spatial variation, and origin of groundwater contamination within, and immediately adjacent to, the Sub-Basin.
5. The possible presence of detached contaminant plumes within the Sub-Basin.

Respondents shall, at a minimum, propose in the Work Plan locations for regional investigation borings/wells as described in Table 1 below (refer to Figure 2, Initial Regional Investigation Areas).

TABLE 1 INITIAL REGIONAL INVESTIGATION LOCATIONS		
AREA	MINIMUM NUMBER OF BORINGS/WELLS	COMMENT
1	7 borings 10 monitoring wells	To the maximum extent practicable, install four Upper Silverado aquifer (USA) and six Shallow Unnamed aquifer (SUA) wells. Respondents shall advance borings at the seven locations identified on Figure 3 (Area 1 Proposed Assessment Locations).
2	Discrete depth sampling in one or more production wells	Collect discrete depth water samples from one or more COSM production wells. The discrete depth sampling methodology to be used and the number of discrete depth samples to be collected will be determined during the Agencies' approval of the work plan.

TABLE 1 INITIAL REGIONAL INVESTIGATION LOCATIONS		
AREA	MINIMUM NUMBER OF BORINGS/WELLS	COMMENT
	1 boring 1 monitoring well location with 2 screened intervals	Elevations of the two intervals to be screened will be determined by the Agencies pending analytical results of discrete depth water samples. If no contamination is detected in the discrete depth water samples, one interval shall be screened across the current water table and one shall be screened across the water table at historical pumping conditions.
3	1 boring	
4	2 borings	
5	1 boring	
6	1 boring	
7	2 borings	

Respondents shall propose to advance continuously cored borings at all drilling locations. Respondents shall propose to collect a sufficient number of water samples at all boring locations utilizing methodologies that will adequately characterize the vertical variation in water quality at each boring location. Respondents shall provide a rationale for the number of water samples and sampling methodologies proposed at each boring location. If Respondents propose the use of a driven (e.g. SimulProbe) type discrete depth sampler, Respondents shall propose to collect a minimum of 6 discrete-depth samples, and the Agencies may require up to 10 discrete-depth samples, at each boring location. Respondents shall specify target total depths for each boring in the Work Plan. Respondents shall propose geophysical logging in accordance with the Agencies' General Requirements at all drilling locations, unless the Agencies waive this requirement.

The Work plan shall be accompanied by an updated SAP, QAP and HASP, if necessary, for this phase of investigation.

Task 12.2 – Regional Investigation Implementation

Respondents shall implement the Regional Investigation Work Plan following approval or approval with modifications by the Agencies.

Respondents shall arrange for laboratory results to be transmitted by the laboratory in the format specified in Section H of this SOW within 45 days of the date the environmental sample is collected.

Task 12.3 – Regional Field Investigation Reporting

The Respondents shall provide a Regional Field Investigation Report that contains all data collected in Tasks 12.1 – 12.3 and an analysis of the data. The analysis shall include figures and tables necessary to adequately explain the results of the investigation. This report shall also include an assessment of whether Respondent would recommend that additional field investigation be conducted in the future to facilitate selection, design or implementation of drinking water or restoration response actions. Such recommendations will not be construed as an agreement by Respondents to perform any additional work pursuant to this SOW.

The Respondents shall also submit Interim Assessment Reports for each regional investigation drilling location to be transmitted within 45 days of receipt of the data transmittal, as required by

Task 12.2 above, from the analytical laboratory. These reports shall contain the data generated by the assessment activities in Task 12.2 as referenced in the Work Plan.

F. INTERIM RESTORATION MEASURES

Interim Restoration Measures may be necessary in order to respond to the MTBE and other gasoline constituent contamination affecting the Charnock Sub-Basin Investigation Area in a timely, efficient and cost-effective manner.

Task 13 – Interim Restoration Measures Evaluation Work Plan

The Respondents shall provide a workplan describing how they will identify and evaluate alternatives for performing interim restoration. Alternatives to be evaluated cannot be inconsistent with the provision of interim drinking water supplies or any likely final remedy. Interim remedies to be evaluated shall include, at a minimum, the following:

- Aggressive dewatering, vapor extraction, and other cleanup methods for mass removal at contaminant source areas.
- Aggressive and sustained pumping of groundwater hot-spots.

The evaluation shall utilize the screening and evaluation framework presented in Task 6.

Task 14 – Interim Restoration Measures Evaluation Report

The Respondents shall recommend in the Interim Restoration Report, interim remedial measures to be taken within the Charnock Sub-Basin Investigation Area to begin restoration of the Charnock Sub-Basin Investigation Area.

The Respondents shall provide an Interim Restoration Measures Evaluation Report (Interim Restoration Analysis of Alternatives (AoA) Report) that contains the following:

- Description of initially identified alternatives / combination of alternatives.
- Description of alternatives screened from further evaluation
- Detailed analysis of alternatives
- Respondents' proposed interim restoration actions

Task 15 – Implementation of Interim Restoration Measures

The Agencies' selected alternative(s) for interim restoration will be specified in a decision document. The rationale for the selection will be included in this document. Respondents shall provide design and operational information for the remediation system at 3816 Tuller Avenue in Culver City.

Task 16 – Interim Restoration Measures Reassessment

Annually, the Respondents shall perform an assessment of the performance of the remediation system at 3816 Tuller Avenue in Culver City, and evaluate modifications to improve the effectiveness of the interim actions, and to account for new information and data. Respondents shall provide a report to the Agencies with the above indicated information by January 30th of each year.

G. COMMUNITY RELATIONS

The Agencies plan to provide opportunities for public involvement to parties with an interest in the Agencies' responses to the Charnock Sub-Basin MTBE and other gasoline constituent contamination.

Task 17 – Community Relations Database

Respondents shall develop a mailing list database in order to facilitate public involvement in Agencies' efforts to address the Charnock Sub-Basin MTBE and other gasoline constituent contamination. The database shall include residents, businesses, organizations, government contacts, environmental organizations, and other interested parties. To the maximum extent practicable, the mailing list should include Names, Business Names, Street Addresses, City, State, Zip Code, Phone Numbers, e-mail addresses, geographic coordinate (State Plane easting and northing), identification of previous contacts with the Agencies or Respondents related to response activities (to the extent that this information is not confidential). The database shall be compatible with Microsoft Access 97 or Microsoft Excel 97 (or an equivalent software package as approved by the Agencies).

The database shall, at a minimum, include the following contacts: (1) water customers of the Charnock Wellfields, (2) contacts within the area within one and one quarter miles from the Charnock Wellfields, (3) the area within a one quarter mile radius of potential siting of response equipment, and (4) the area within one eighth miles of the location of potential pipeline construction. Other contacts will be included in the database as set forth the in the approved Work Plan developed under Task 1.1 of this SOW.

Task 18 – Fact Sheet Printing and Mailing

Respondents shall perform the mailing of fact sheets related to the Interim Response Measures. While Respondents may propose material to be included, fact sheets will be written by the Agencies and shall be mailed up to four times per year to the public, as identified by the Agencies. The fact sheets shall be mailed to the contacts in the database described in Task 17 (following approval by the Agencies of the database) within three weeks of text and layout approval by the Agencies.

Task 19 – Hosting Public Informational Meetings

The Respondents shall provide facilities for public informational meetings to be held by the Agencies. These meetings will occur approximately twice per year. The meeting facilities shall be capable of providing theater style seating for all persons attending, shall include audio/visual equipment for presentations (public address system, screen, overhead projector, LCD VGA projector, podium, and discussion panel table). The meeting facilities shall be located in the West Los Angeles, Santa Monica, and Culver City areas. The Agencies will provide a minimum of 45 days notice prior to requiring the Respondents to provide facilities for public meetings.

The Respondents shall send notices of meeting logistics to the public identified by the Agencies (e.g. the contacts identified in Task 17, as approved by the Agencies) at least 14 days prior to the meeting date.

Other Community Relations Activities:

Website: Respondents will assist posting of information on the SOW and its execution on the EPA's Charnock Project website or other appropriate website.

Targeted Local Notification for Drilling Activities: Respondents will distribute flyers to residents in the areas near drilling locations. The flyers will provide information on activities that may affect traffic or impact the community in some other way. Information on the flyers will include the nature of the work being performed and the anticipated schedule.

H. REPORTING FORMAT

AGENCIES' PROJECT COORDINATORS

David Bacharowski
Los Angeles Regional Water Quality Control Board
320 West 4th Street, Suite 200
Los Angeles, CA 90013

Steven Linder
US EPA Region 9
75 Hawthorne Street (WST-8)
San Francisco, CA 94105

HARD COPY DISTRIBUTION

Respondents shall submit copies of all draft reports, letter reports, final technical reports, quarterly groundwater monitoring reports, and work plans in the quantities indicated, to the following (11 hard copies total):

Los Angeles Regional Water Quality Control Board Project Coordinator - 2 copies
U.S. EPA Region 9 Project Coordinator - 2 copies
U.S. EPA Region 9 Contractor - 1 copy
City of Santa Monica - 1 copy
City of Santa Monica Contractors – 2 copies
Southern California Water Company - 1 copy
Southern California Water Company Contractor – 1 copy
Department of Health Services – 1 copy

Respondents shall submit copies of all data submittals, progress reports, monthly reports, and correspondence related to implementation of the SOW in the quantities indicated, to the following (9 hard copies total):

Los Angeles Regional Water Quality Control Board Project Coordinator - 2 copies
U.S. EPA Region 9 Project Coordinator - 2 copies
U.S. EPA Region 9 Contractor – 1 copy
City of Santa Monica Contractors - 2 copies
Southern California Water Company Contractor - 1 copy
Department of Health Services – 1 copy

ANALYTICAL DATA SUBMITTAL FORMAT

Respondents shall provide all analytical data collected under this SOW in the format specified on LARWQCB Lab Form 10A.

Respondent(s) shall provide data packages from the analyzing laboratory for all analytical data collected under this SOW.

Laboratory data packages shall consist of:

- 1) **SAMPLE RESULTS.** Includes sample ID, analyte concentration, practical quantitation limit, dates of sampling and analysis, chains of custody.
- 2) **QC SUMMARIES.** Includes results for method blanks, LCS, MS/MSD, duplicates, surrogates, and internal standards (individual summaries are method-dependent).

Respondents shall ensure that the following analytical data information is maintained and provided to the Agencies upon request for a minimum of 10 years after the Work is completed under this SOW:

- 1) **CALIBRATION AND INSTRUMENT PERFORMANCE SUMMARIES.** Includes results for initial calibrations, continuing calibrations, GC/MS tuning, ICP serial dilutions, and interference check samples (individual summaries are method-dependent).
- 2) **ALL RAW DATA.** Includes chromatograms, instrument print-outs, run logs, sample prep logs, calibration standard prep logs, method detection limit studies, and sample handling documentation (as appropriate).

ELECTRONIC DISTRIBUTION

All draft reports, letter reports, final technical reports, quarterly groundwater monitoring reports, work plans, data submittals, progress reports, monthly reports, and correspondence related to implementation of the SOW shall also be delivered in the electronic format specified below via e-mail (for electronic files under 1 megabyte) or via CD-ROM (for electronic files over 1 megabyte).

For files delivered via CD-ROM, Respondents shall submit copies in the quantities indicated, to the following (9 CD-ROM copies total):

Los Angeles Regional Water Quality Control Board Project Coordinator - 2 copies
U.S. EPA Region 9 Project Coordinator - 2 copies
U.S. EPA Region 9 Contractor – 1 copy
City of Santa Monica Contractors - 2 copies
Southern California Water Company Contractor - 1 copy
Department of Health Services – 1 copy

E-MAIL DELIVERY

It is required that all documents delivered by electronic mail shall follow the requirements below:

- 1) The header or subject line of all e-mail messages shall include the phrase “Charnock Initial Regional Response Activities” or “CIRRA.”
- 2) The text of the message shall include a description of attachments.
- 3) All attachments shall comply with the Electronic Format Requirements as specified in this document.
- 4) All messages shall be sent to all of the individuals listed in E-mail Distribution List 1, or any revised e-mail contact list subsequently provided by the Agencies.
- 5) All messages containing correspondence, reports or workplans shall also provide an electronic copy of the executive summary of the document to all of the individuals listed in E-mail Distribution List 2, or any revised e-mail contact list subsequently provided by the Agencies.

E-mail Distribution List 1

Name	Organization	E-mail Address
David Bacharowski	Regional Board	dbacharo@rb4.swrcb.ca.gov

Yue Rong	Regional Board	yrong@rb4.swrcb.ca.gov
Weixing Tong	Regional Board	wtong@rb4.swrcb.ca.gov
Jay Huang	Regional Board	jhuang@rb4.swrcb.ca.gov
Steven Linder	EPA	linder.steven@epa.gov
Greg Lovato	EPA	lovato.greg@epa.gov
Carl Warren	EPA	warren.carl@epa.gov
Bobby Ojha	EPA	ojha.bobby@epa.gov
Latha Rajagopalan	EPA	rajagopalan.latha@epa.gov
Walter Crone	Ninyo & Moore (EPA Contractor)	wcrone@ninyoandmoore.com
Mike Schwennesen	E&E (EPA Contractor)	mschwennesen@ene.com
James Farrow	Komex (COSM Contractor)	jfarrow@losangeles.komex.com
Rey Rodriguez	H2OR2 Consultants (COSM Contractor)	mapper3d@aol.com
Toby Moore	Mission Geoscience (SCWC Contractor)	tbmoore@missiongeo.com
Heather Collins	California Department of Health Services	hcollin2@dhs.ca.gov

E-mail Distribution List 2

Name	Organization	E-mail Address
Laurie Williams	EPA	williams.laurie@epa.gov
Marleigh Wood	Regional Board	jleon@exec.swrcb.ca.gov
Denise Kruger	SCWC	dlkruger@scwater.com
Gil Borboa	COSM	gil-borboa@ci.santa-monica.ca.us
Joe Lawrence	COSM	joe-lawrence@ci.santa-monica.ca.us
Robert Saperstein	Hatch and Parent	rsaperstein@hatchparent.com

I. SCHEDULE OF COMPLIANCE

Respondents are required to submit deliverables and complete all required actions in accordance with the Schedule of Compliance (Table 2) and sections I.1. and I.2. below. Respondents shall submit all deliverables in the format specified in Section H of the SOW (with the exception of the deliverable associated with Task 8.3.). Respondents shall submit all deliverables by the final day of the specified duration. For deliverables or required actions where the due date falls on a weekend or federal or state holiday, the due date shall be the next business day. For example, if the deliverable associated with a task has a 60 day duration, Respondents must submit the deliverable on the 60th day, unless that day falls on a weekend or federal or state holiday, in which case Respondents must submit that deliverable on the next business day. Task durations begin the day after Preceding Task/Events are completed.

Upon written approval of the Agencies, the frequency of Task 3, Monthly Technical Meetings, may be reduced.

Section I.1.

Respondents shall continue to perform the following tasks:

- Task 2 (Monthly Progress Reporting)
- Task 3 (Monthly Technical Meetings)
- Task 7.1 (Quarterly Regional Groundwater Well Gauging, Sampling and Analysis)
- Tasks 17-19 (Community Relations)

until 365 days after the last Agency approval of the final deliverable or actions associated with the following tasks:

- Task 4 (Interim Provision of Drinking Water Information Summary Report)
- Task 5 (Treatability Technology Performance Report)
- Task 6.2-6.10 (Analysis of Alternatives Detailed Evaluation Report)
- Task 9 (Conceptual Flow and Transport Model Report)

- Task 10.1.1 and Task 10.1.2 (Groundwater Flow Model and Report)
- Task 11 (Current Conditions Report)
- Task 12.3 (Regional Field Investigation Report)
- Task 14 (Interim Restoration Measures Evaluation Report)
- Task 17 (Community Relations Database)

or until January 7, 2005, whichever occurs first.

Section I.2.

Respondents shall continue to submit deliverables associated with the following tasks:

- Task 7.2 (Charnock Sub-Basin Investigation Area Quarterly Groundwater Monitoring Report)
- Task 8.4 (Quarterly Updates of Database/GIS System)

for all quarterly monitoring events which they are required to perform under section I.1 above.

TABLE 2 SCHEDULE OF COMPLIANCE				
Task(s)	Deliverable/Action	Duration/Due Date		Preceding Task/Event
1	SOW Work Plan and Project Schedule	45 days		July 3, 2000
2	Monthly Progress Report	Monthly 15 days after the end of the month. First report due within 45 days of effective date.		July 3, 2000
3	Monthly Technical Meetings	within 10 days and once within every 30 days thereafter		Task 2
4	Interim Provision of Drinking Water Information Summary Report	90 days		July 3, 2000
5	Treatment Technology Performance Report	90 days		July 3, 2000
6.1	General Response Alternatives Identification and Screening Evaluation Letter Report	65 days		July 3, 2000
6.2-6.11	Analysis of Alternatives Detailed Evaluation Report (Drinking Water Replacement)	210 days		Agencies' Approval of Task 6.1 Deliverable
7.1	Quarterly Regional Groundwater Gauging, Sampling and Analysis	<u>Quarter¹</u> Jan/Feb/Mar Apr/May/Jun Jul/Aug/Sep Oct/Nov/Dec	<u>Due Date</u> Third week of Jan Third week of Apr Third week of Jul Third week of Oct	<i>[Initial event to occur third week of July, 2000]</i>
7.2	Regional Quarterly Monitoring Results Table	<u>Quarter¹</u> Jan/Feb/Mar	<u>Due Date</u> May 1	<i>[Initial QMR Table due October 15, 2000]</i>

TABLE 2
SCHEDULE OF COMPLIANCE

Task(s)	Deliverable/Action	Duration/Due Date		Preceding Task/Event
		Apr/May/Jun Jul/Aug/Sep Oct/Nov/Dec	Aug 1 Nov 1 Feb 1	
7.3	Charnock Sub-Basin Investigation Area Quarterly Groundwater Monitoring Report	<u>Quarter</u> ¹ Jan/Feb/Mar Apr/May/Jun Jul/Aug/Sep Oct/Nov/Dec	<u>Due Date</u> June 15 Sep 15 Dec 15 Mar 15	<i>[Initial Sub-Basin Quarterly Report due December 1, 2000]</i>
8.1 – 8.3	Environmental Database with GIS Enhancements on Dedicated Computers	120 days		July 3, 2000
8.4	Quarterly Updates of Database/GIS System	<u>Quarter</u> ¹ Jan/Feb/Mar Apr/May/Jun Jul/Aug/Sep Oct/Nov/Dec	<u>Due Date</u> June 1 Sep 1 Dec 1 Mar 1	<i>[Initial GIS Quarterly Update due March 1, 2001]</i>
9	Conceptual Flow and Transport Model Report	45 days		July 3, 2000
10.1.1	Numerical Groundwater Flow Model	180 days		July 3, 2000
10.1.2	Groundwater Flow Modeling Report	180 days		July 3, 2000
11	Current Conditions Report	90 days		July 3, 2000
12.1	Regional Field Investigation Work Plan	30 days		July 3, 2000

TABLE 2 SCHEDULE OF COMPLIANCE			
Task(s)	Deliverable/Action	Duration/Due Date	Preceding Task/Event
12.2	Regional Field Investigation Field Work Completion	In accordance with Agencies' approval of Task 12.1 Deliverable	
12.3	Regional Field Investigation Report	270 days	Agencies' Approval of Task 12.1 Deliverable
	Regional Field Investigation Interim Assessment Reports	45 days	Refer to date(s) set in Agencies' Approval of Task 12.1 Deliverable
13	Interim Restoration Measures Work Plan	45 days	July 3, 2000
14	Interim Restoration Measures Evaluation Report	270 days	Agencies' Approval of Task 13 Deliverable
16	Interim Restoration Measures Reassessment	Annually/January 30 th of each year	Annual Report
17	Community Relations Database	90 days	July 3, 2000
18	Fact Sheet Printing and Mailing	30 days up to 4 times per year	Receipt of Final Fact Sheet text from Agencies
19	Hosting Public Meetings	45 days up to 2 times per year	Notification from Agencies
19	Notification of Public Meetings	14 days prior to each Public Meeting, up to 2 times per year	
	Propose Laboratory for Split Sample Analysis Services Pursuant to Section XX of AOC	30 days	July 3, 2000

¹Quarter refers to that quarter in which the groundwater monitoring event occurs.

Attachment B

Unilateral Order for Participation and Cooperation
in Initial Regional Response
EPA Docket No. RCRA-7003-09-2001-0001 (November 2000)
Respondents' Source Sites and Responsible Parties List*

- | | |
|---|---|
| 1. PRP Site No. 1
Super Petrol Fuels
Former Exxon #7-9477
11284 Venice Boulevard
Culver City, CA | Responsible Party:
Exxon |
| 2. PRP Site No. 4
AM/PM
Arco #1246
11181 Washington Boulevard
Culver City, CA | Responsible Party:
Arco |
| 3. PRP Site No. 5
Chevron #9-2894
11197 Washington Place
Culver City, CA | Responsible Party:
Chevron |
| 4. PRP Site No. 6
Former Conoco/Kayo/Douglas
11198 Washington Place
Culver City, CA | Responsible Parties:
Conoco, Kayo, Douglas |
| 5. PRP Site No. 7
Former Unocal #3016
11203 Washington Place
Culver City, CA | Responsible Party:
Unocal |
| 6. PRP Site No. 8
Mobil #11-FX-5
3800 Sepulveda Boulevard
Culver City, CA | Responsible Party:
Mobil |

Attachment B (Continued)
Unilateral Order for Participation and Cooperation
in Initial Regional Response
EPA Docket No. RCRA-7003-09-2001-0001 (November 2000)
Respondents' Source Sites and Responsible Parties List

- | | |
|---|---|
| 7. PRP Site No. 10
Chevron
3775 Sepulveda Boulevard
Los Angeles, CA | Responsible Party:
Chevron |
| 8. PRP Site No. 12
Winall Oil Company
10646 Venice Boulevard
Los Angeles, CA | Responsible Party:
Winall Oil Company |
| 9. PRP Site No. 16
Tosco
Unocal #4357
11280 National Boulevard
Los Angeles, CA | Responsible Parties:
Tosco and Unocal |
| 10. PRP Site No. 23
Thrifty Oil #247
Former Chevron #9-0392
3505 Sepulveda Boulevard
Los Angeles | Responsible Parties:
Thrifty, Chevron |
| 11. PRP Site No. 30
Great West Car Wash
11166 Venice Boulevard
Los Angeles, CA | Responsible Parties:
Kazuho Nishida, HLW |